UK Interpretation Guidance for…

BEST AVAILABLE TECHNIQUES (BAT) CONCLUSIONS FOR PRESERVATION OF WOOD AND WOOD PRODUCTS WITH CHEMICALS

The black text is taken directly from Commission Implementing Decision (EU) 2020/2009 of 22 June 2020, establishing the best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions, for surface treatment using organic solvents including preservation of wood and wood products with chemicals. Which was published in the Official Journal of the European Union on 9 December 2020.

The green text gives further guidance on how to interpret the black text within the UK, or parts of the UK.

Note: this guidance refers only to the wood preservation elements of the BAT conclusions, which also cover wood preservation. Separate guidance is available on surface treatment with organic solvents.

The full text of the BAT conclusions can be found at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020D2009&qid=1607503968689

Link to the Official Journal: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2020:414:TOC

The full text of the STS BAT Reference Document (BREF) can be found at: https://eippcb.jrc.ec.europa.eu/reference/surface-treatment-using-organic-solvents-including-wood-and-wood-products-preservation

SCOPE

These BAT conclusions concern the following activities specified in Annex I to Directive 2010/75/EU:

6.10: Preservation of wood and wood products with chemicals with a production capacity exceeding 75 m^3 per day other than exclusively treating against sapstain.

UK Interpretation Guidance

This activity is set out in UK legislation as follows:

- In England and Wales, Schedule 1, Part 2, Section 6.6 A(2) (a) of the Environmental Permitting Regulations 2016 (EPR)
- In Scotland, Schedule 1, Part 1, Section 6.6, Part A of the Pollution Prevention and Control (Scotland) Regulations 2012 (PPCR).
- In Northern Ireland, Schedule 1, Part 1, Section 6.6, Part A (b) of the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013.

In England and Wales, the competent authority is the relevant Local Authority, unless it is part of an A1 installation, in which case it is regulated in England by the Environment Agency (EA) and in Wales by Natural Resources Wales (NRW).

In Scotland the competent authority is the Scottish Environmental Protection Agency (SEPA).

In Northern Ireland the competent authority is the Northern Ireland Environment Agency (NIEA).

See Annex I for further information on interpreting capacity.

6.11: Independently operated treatment of waste water not covered by Directive 91/271/EEC provided that the main pollutant load originates from activities specified in point 6.10 of Annex I to Directive 2010/75/EU.

UK Interpretation Guidance

It is very unlikely that this will occur in practice. However if it does, this activity is set out in UK legislation as follows:

- In England and Wales, Schedule 1, Part 2, Section 5.7 A(1) (a) of the EPR.
- In Scotland, Schedule 1, Part 1, Section 5.7, Part A of the PPC Regulations.
- In Northern Ireland, Schedule 1, Part 1, section 6.11, Part A of the Pollution Prevention and Control (Industrial Emissions) Regulations (Northern Ireland) 2013.

In England, the competent authority is the Environment Agency (EA).

In Wales, the competent authority is Natural Resources Wales (NRW).

In Scotland the competent authority is the Scottish Environmental Protection Agency (SEPA).

In Northern Ireland the competent authority is the Northern Ireland Environment Agency (NIEA).

These BAT conclusions also cover the combined treatment of waste water from different origins provided that the main pollutant load originates from the activities specified in point 6.10 of Annex I to Directive 2010/75/EU and that the waste water treatment is not covered by Directive 91/271/EEC.

UK Interpretation Guidance

Again, this is very unlikely that this will occur in practice. However, if it does, the main polluting load is to be interpreted as follows:

- ‘main’ means the largest contribution of any of the waste waters from different origins entering the treatment plant on average.
- ‘pollutant’ means the pollutant of greatest environmental concern.
- ‘pollutant load’ means the mass of the pollutant concerned.

These BAT conclusions do not address the following:

- Chemical modification and hydrophobisation (e.g. using resins) of wood and wood products.
- Sapstain treatment of wood and wood products.
- Ammonia treatment of wood and wood products.
- On-site combustion plants. This may be covered by the BAT conclusions for large combustion plants (LCP) or by Directive 2015/2193/EU.

UK Interpretation Guidance

Directive 2015/2193/EU is a reference to Medium Combustion Plants (MCP). Operators and regulators should check whether there are any indirectly heated drying kilns needing an MCP permit. Operators and regulators should similarly check whether any combustion plants used for burning off cuts of waste wood need an MCP or 5.1 Part B permit (Part C in Northern Ireland).

Other BAT conclusions and reference documents which may be of relevance for the activities covered by these BAT conclusions are the following:

- Economics and Cross-Media Effects (ECM).
- Emissions from Storage (EFS).
- Energy Efficiency (ENE).
- Waste Treatment (WT).
- Large Combustion Plants (LCP).
- Monitoring of Emissions to Air and Water from IED Installations (ROM).

DEFINITIONS

For the purposes of these BAT conclusions, the following definitions apply:

General Terms	
Term used	**Definition**
Batch discharge	Discharge of a discrete, contained volume of water.
Continuous measurement	Measurement using an automated measuring system permanently installed on site for continuous monitoring of emissions, according to EN 14181.
Existing plant	A plant that is not a new plant.
Grade B or C creosote	Types of creosote for which specifications are given in EN 13991.
Major plant upgrade	A major change in the design or technology of a plant with major adjustments or replacements of the process and/or abatement technique(s) and associated equipment.
New plant	A plant first permitted on the site of the installation following the publication of these BAT conclusions or a complete replacement of a plant following the publication of these BAT conclusions.
Off-gas	The gas extracted from a process, piece of equipment or area which is either directed to treatment or discharged directly to air through a stack.
Organic compound	Organic compound as defined in Article 3(44) of Directive 2010/75/EU.
Organic solvent	Organic solvent as defined in Article 3(46) of Directive 2010/75/EU.
Plant	All parts of an installation that carry out an activity listed in point 6.10 of Annex I to Directive 2010/75/EU and any other directly associated activities which have an effect on consumption and/or emissions. Plants may be new plants or existing plants.

General Terms	
Term used	**Definition**
Sector	Any of the surface treatment activities that are part of activities listed in point 6.10 of Annex I to Directive 2010/75/EU and are referred to in Section 18.2 of these BAT conclusions.
Sensitive receptor	Area which needs special protection, such as: - residential areas, - areas where human activities are carried out (e.g. neighbouring workplaces, schools, day-care centres, recreational areas, hospitals or nursing homes).
Solvent	'Solvent' refers to 'organic solvent'.
Solvent input	The total quantity of organic solvents used as defined in Part 7, 3(b) of Annex VII to Directive 2010/75/EU.
Solvent-based (SB)	Type of paint, ink or other coating material using solvent(s) as the carrier. For preservation of wood and wood products, it refers to the type of treatment chemicals.
Solvent mass balance (SMB)	A mass balance exercise conducted at least once per year according to Part 7 of Annex VII to Directive 2010/75/EU.
Surface run-off water	Water from precipitation that flows over land or impervious surfaces, such as paved streets and storage areas, rooftops, etc. and does not soak into the ground.
Treatment chemicals	Chemicals used in wood and wood products preservation such as biocides, chemicals used for waterproofing (e.g. oils, emulsions) and flame retardants. This also includes the carrier of active substances (e.g. water, solvent).
Valid hourly/half-hourly average	An hourly/half-hourly average is considered valid when there is no maintenance or malfunction of the automated measuring system.
Waste gases	Waste gases as defined in Article 57(2) of Directive 2010/75/EU.
Water-based (WB)	Type of paint, ink or other coating material in which water replaces all or part of the solvent content. For preservation of wood and wood products, it refers to the type of treatment chemicals.
Wood preservation	Activities whose purpose is to protect wood and wood products from the damaging effects of fungi, bacteria, insects, water, weather or fire; to provide long-term conservation of structural integrity and improve the resistance of wood and wood products.

Pollutants and parameters	
Term used	**Definition**
CO	Carbon monoxide.
Dust	Total particulate matter (in air).
HOI	Hydrocarbon oil index. The sum of compounds extractable with a hydrocarbon solvent (including long-chain or branched aliphatic, alicyclic, aromatic or alkyl-substituted aromatic hydrocarbons).
NO_X	The sum of nitrogen monoxide (NO) and nitrogen dioxide (NO_2), expressed as NO_2.
PAHs	Polycyclic aromatic hydrocarbons.
TVOC	Total volatile organic carbon, expressed as C (in air).
VOC	Volatile organic compound as defined in Article 3(45) of Directive 2010/75/EU.

ACRONYMS

For the purposes of these BAT conclusions, the following acronyms apply:

Acronym	Definition
BPR	Biocidal Products Regulation (Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products).
DWI	Draw and wall ironing (a type of can in the metal packaging industry).
EMS	Environmental management system.
IED	Industrial Emissions Directive (2010/75/EU).
IR	Infrared.
LEL	Lower explosive limit – the lowest concentration (percentage) of a gas or vapour in air capable of producing a flash of fire in the presence of an ignition source. Concentrations lower than LEL are 'too lean' to burn. Also called lower flammable limit (LFL).
OTNOC	Other than normal operating conditions.
STS	Surface treatment using organic solvents.
UV	Ultraviolet
WPC	Preservation of wood and wood products with chemicals.

GENERAL CONSIDERATIONS

Best Available Techniques

The techniques listed and described in these BAT conclusions are neither prescriptive nor exhaustive. Other techniques may be used that ensure at least an equivalent level of environmental protection.

Unless otherwise stated, these BAT conclusions are generally applicable.

UK Interpretation Guidance

The onus to demonstrate that other techniques deliver at least an equivalent level of environmental protection is with the operator. The most straightforward way this can be done is by ensuring that all the relevant BAT-AELs and BAT-AEPLs can be achieved using the techniques in question. The competent authority will make a decision on whether these other techniques are BAT based on the information and data presented by the operator.

Article 3(13) of Directive 2010/75/EU defines ‘emission levels associated with the best available techniques’ (BAT-AELs) as ‘the range of emission levels obtained under normal operating conditions using a best available technique or a combination of best available techniques, expressed as an average over a given period of time, under specified reference conditions’.

Environmental performance levels associated with BAT (BAT-AEPLs) are a broader term described in Commission Implementing Decision 2012/119/EU, more commonly referred to as the BREF Guidance. Whilst BAT-AEPLs may include emission levels (BAT-AELs), they are more commonly used in BAT conclusions to express environmental performance based on parameters other than emissions, e.g. consumption levels, or abatement efficiency.

Emission levels associated with the best available techniques (BAT-AELs)

BAT-AELs and indicative emission levels for emissions in waste gases

Emission levels associated with the best available techniques (BAT-AELs) and indicative emission levels for emissions in waste gases given in these BAT conclusions refer to concentrations, expressed as mass of emitted substance per volume of waste gas under the following standard conditions: dry gas at a temperature of 273.15 K and a pressure of 101.3 kPa, without correction for oxygen content and expressed in mg/Nm^3.

For averaging periods of BAT-AELs and indicative emission levels for emissions in waste gases, the following definitions apply.

Type of measurement	Averaging period	Definition
Continuous	Daily average	Average over a period of one day based on valid hourly or half-hourly averages.
Periodic	Average over the sampling period	Average value of three consecutive measurements of at least 30 minutes each ([1]).
([1]) For any parameter where, due to sampling or analytical limitations and/or due to operational conditions, a 30-minute sampling/measurement and/or an average of three consecutive measurements is inappropriate, a more representative sampling/measurement procedure may be employed.		

BAT conclusions for preservation of wood and wood products with chemicals

1. Environmental management systems

BAT 1. In order to improve the overall environmental performance, BAT is to elaborate and implement an Environmental Management System (EMS) that incorporates all of the following features:

(i) commitment, leadership, and accountability of the management, including senior management, for the implementation of an effective EMS;

(ii) an analysis that includes the determination of the organisation's context, the identification of the needs and expectations of interested parties, the identification of characteristics of the installation that are associated with possible risks for the environment (or human health) as well as of the applicable legal requirements relating to the environment;

(iii) development of an environmental policy that includes the continuous improvement of the environmental performance of the installation;

(iv) establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements;

(v) planning and implementing the necessary procedures and actions (including corrective and preventive actions where needed), to achieve the environmental objectives and avoid environmental risks;

(vi) determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed;

(vii) ensuring the necessary competence and awareness of staff whose work may affect the environmental performance of the installation (e.g. by providing information and training);

(viii) internal and external communication;

(ix) fostering employee involvement in good environmental management practices;

(x) establishing and maintaining a management manual and written procedures to control activities with significant environmental impact as well as relevant records;

(xi) effective operational planning and process control;

(xii) implementation of appropriate maintenance programmes;

(xiii) emergency preparedness and response protocols, including the prevention and/or mitigation of the adverse (environmental) impacts of emergency situations;

(xiv) when (re)designing a (new) installation or a part thereof, consideration of its environmental impacts throughout its life, which includes construction, maintenance, operation and decommissioning;

(xv) implementation of a monitoring and measurement programme; if necessary, information can be found in the Reference Report on Monitoring of Emissions to Air and Water from IED Installations;

(xvi) application of sectoral benchmarking on a regular basis;

(xvii) periodic independent (as far as practicable) internal auditing and periodic independent external auditing in order to assess the environmental performance and to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;

(xviii) evaluation of causes of nonconformities, implementation of corrective actions in response to nonconformities, review of the effectiveness of corrective actions, and determination of whether similar nonconformities exist or could potentially occur;

(xix) periodic review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;

(xx) following and taking into account the development of cleaner techniques.

UK Interpretation Guidance

BAT 1 and BAT 30 should be considered together.

BAT 30. In order to improve the overall environmental performance, BAT is to elaborate and implement an Environmental Management System (EMS) that incorporates all of the features (i) to (xx) of BAT 1 as well as the following specific features:

(i) Keeping up to date with the developments in biocidal products and in associated legislation (e.g. authorisation of products under the BPR) with a view to using the most environmentally friendly processes.

(ii) Inclusion of a solvent mass balance for solvent-based and creosote treatment (see BAT 33 (c)).

(iii). Identification and listing of all environmentally critical process and abatement equipment (whose failure could have an impact on the environment) (see BAT 46 (c)). The list of critical equipment is kept up to date.

(iv) Inclusion of plans for the prevention and control of leaks and spillages, including waste management guidelines for dealing with waste arising from spillage control (see BAT 46).

(v) Recording of accidental leakages and spillages, and improvement plans (countermeasures).

Note

Regulation (EC) No 1221/2009 establishes the European Union eco-management and audit scheme (EMAS), which is an example of an EMS consistent with this BAT.

Applicability

The level of detail and the degree of formalisation of the EMS will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have.

UK Interpretation Guidance

BAT 1 and BAT 30 should be considered together.

All installations should already have an EMS. Most permits will already include this as a standard condition.

Any permit that does not include a requirement to have an EMS should be varied to include this requirement as soon as possible. Operators should be given a maximum of one year from the date of the variation to bring their EMS into operation.

In any event, operators need to review their EMS to ensure it meets all the requirements of BAT 1. Requirements (i) to (xx) are standard features of most EMSs. Those operators who have an EMS which meets the requirements of ISO 14001 or the EU eco-management and audit scheme (EMAS), their EMS is likely to contain all of these features.

For these operators, the review is likely to focus around the specific requirements of BAT 30 and incorporating where relevant the requirements of BATs 33 and 46 into the EMS.

For those operators who do not have a certified EMS, the review will need to cover all elements of BAT 1 and BAT 30.

The Regulator should set a reasonable timescale to carry out the review, probably 6 months. The review should set out:

- Which parts of BAT 1 and BAT 30, their EMS already meets
- Those parts of BAT 1 and BAT 30, that are not met or where improvement is needed
- An action plan to carry out the improvements needed.

This can be done by means of an improvement condition if necessary. A list of suggested improvement conditions are listed in Annex II. Once complete, the EMS should be included as an operating technique in the permit.

When assessing the adequacy of the EMS, Regulators should take into account the nature, scale and complexity of the installation, along with the environmental impacts it may have, making appropriate risk based judgements.

2. Substitution of harmful/hazardous substances

BAT 31. In order to prevent or reduce emissions of PAHs and/or solvents, BAT is to use water-based preservatives.

Description

Solvent-based preservatives or creosote are replaced by water-based preservatives. Water acts as the carrier for the biocides.

Applicability

The applicability may be restricted due to product quality requirements or specifications.

UK Interpretation Guidance

BAT 31, 32 and 33 should be reviewed together.

BAT 32. In order to reduce the environmental risk posed by the use of treatment chemicals, BAT is to substitute treatment chemicals currently in use with less hazardous ones based on a regular (e.g. once every year) check aiming at identifying potentially new available and safer alternatives.

Applicability

Substitution may be restricted due to product quality requirements or specifications.

UK Interpretation Guidance

BAT 31, 32 and 33 should be reviewed together.

3. Resource efficiency

BAT 33. In order to increase resource efficiency and to reduce the environmental impact and risk associated with the use of treatment chemicals, BAT is to reduce their consumption by using all of the techniques given below.

Technique		Description	Applicability
a.	Use of an efficient preservative application system	Application systems where the wood is immersed in the preservative solution are more efficient than, for example, spraying. The application efficiency of vacuum processes (closed system) is close to 100 %. The selection of the application system takes into account the use class and the penetration level needed.	Only applicable to new plants or major plant upgrades.
b.	Control and optimisation of the consumption of the treatment chemicals for the specific end use	Control and optimisation of the consumption of the treatment chemicals by: (a) weighing the wood/wood products before and after impregnation; or (b) determining the amount of preservative solution during and after impregnation. The consumption of the treatment chemicals follows suppliers' recommendations and does not lead to exceedances of the retention requirements (e.g. set in product quality standards).	Generally applicable

Technique		Description	Applicability
c.	Solvent mass balance	The compilation, at least once every year, of organic solvent inputs and outputs of a plant as defined in Part 7(2) of Annex VII to Directive 2010/75/EU.	Only applicable to plants using solvent-based treatment chemicals or creosote.
d.	Measurement and adjustment of wood moisture before treatment	Wood moisture is measured prior to treatment (e.g. by measuring the electric resistance or by weighing) and adjusted if needed (e.g. by further seasoning of the wood) in order to optimise the impregnation process and ensure the required product quality.	Only applicable if wood with a specific moisture content is needed.

UK Interpretation Guidance

BAT 31, 32 and 33 should be reviewed together.

The operator should be asked to carry out an initial review as part of the permit review process. Existing Permit conditions could be used to trigger such a review. Alternatively this can be done by improvement condition, see Annex II.

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning. Where other techniques are used, operators should indicate how these techniques achieve at least an equivalent level of environmental performance.

The use of water based preservatives only, greatly simplifies the permitting of these sites. The use of solvent based preservatives and creosote should be justified by the operator.

Where solvent based treatment chemicals are used, the installation will also be classified as a solvent emissions activity. Sites treating more than 75 m^3/day of timber with solvent based chemicals will inevitably have a solvent consumption capacity of more than 200 tonnes per year and so will need to comply with the relevant BAT conclusions for Surface Treatment with Organic Solvents as well as those for Wood Preservation with Chemicals.

BAT 32 is aimed at those operators using water based treatments. Solvent based treatment and creosote treatment being covered by BAT 31. Some of the techniques in BAT 33 may not be applicable to some activities, e.g. if only water based treatment chemicals are used.

Where a solvent mass balance is required, the permit will need to include an emission limit value for either fugitive or total emissions, this is discussed further in Section 12.

For sites not using solvents, creosote or hazardous chemicals, a review every 4 years, which forms a standard condition in many permits, is satisfactory. The frequency of the review can be increased where appropriate.

Once complete, a summary of the review should be included as an operating technique in the permit.

4. Delivery, storage and handling of treatment chemicals

BAT 34. In order to reduce emissions from delivery, storage and handling of treatment chemicals, BAT is to use technique (a) or (b) and all of the techniques (c) to (f) given below.

Technique		Description
a.	Back-venting	Also referred to as vapour balancing. Vapours of solvents or creosote which are displaced from the receiving tank during filling are collected and returned to the tank or truck from which the liquid is delivered.
b.	Capture of displaced air	Vapours of solvents or creosote which are displaced from the receiving tank during filling are collected and led to a treatment unit, e.g. an activated carbon filter or a thermal oxidation unit.
c.	Techniques to reduce evaporation losses due to heating up of stored chemicals	When exposure to sunlight may lead to evaporation of solvents and creosote stored in above-ground storage tanks, tanks are covered by a roof or coated with light-coloured paint to reduce the heating up of stored solvents and creosote.
d.	Securing delivery connections	Delivery connections to storage tanks located within the bunded/contained area are secured and shut off when not in use.
e.	Techniques to prevent overflows during pumping	This includes ensuring that: • the pumping operation is supervised; • for larger quantities, bulk storage tanks are fitted with acoustic and/or optical high-level alarms, with shut-off systems if necessary.
f.	Closed storage containers	Use of closed storage containers for treatment chemicals.

UK Interpretation Guidance

Techniques (a) to (c) are only applicable where solvent based preservatives or creosote is used, and concern emissions to air. BAT 34 (a) to (c) should therefore be reviewed alongside BAT 49 to 52.

Techniques (d) to (f) apply to all processes including the use of water based preservatives and are concerned with the prevention of spillages and emissions to water and groundwater. BAT 34 (d) to (f) should therefore be reviewed alongside other BATs with the same objective, in particular BAT 40 and 46.

5. Preparation/conditioning of wood

BAT 35. In order to reduce the consumption of treatment chemicals and the consumption of energy and to reduce emissions of treatment chemicals, BAT is to optimise the wood charge of the vessel and to avoid trapping of treatment chemicals by using a combination of the techniques given below.

Technique		Description	Applicability
a.	Separation of wood in packs by spacers	Spacers are placed at regular intervals in the packs to facilitate the flow of treatment chemicals through the pack and the draining after treatment.	Generally applicable.

Technique		Description	Applicability
b.	Sloping of wood packs in traditional horizontal treatment vessels	Wood packs are inclined in the treatment vessel to facilitate the flow of treatment chemicals and the draining after treatment.	Generally applicable.
c.	Use of tilting pressure treatment vessels	The whole treatment vessel is inclined after treatment so that excess treatment chemicals drain easily and can be recovered from the bottom of the vessel.	Only applicable to new plants or major plant upgrades
d.	Optimised positioning of shaped wood pieces	Shaped wood pieces are positioned so as to prevent trapping of treatment chemicals.	Generally applicable.
e.	Securing wood packs	The wood packs are secured inside the treatment vessel in order to limit the movement of wood pieces which could change the structure of the pack and reduce the impregnation efficiency.	Generally applicable.
f.	Maximisation of the wood load	The wood load in the treatment vessel is maximised to ensure the best ratio between the wood to be treated and the treatment chemicals.	Generally applicable.

UK Interpretation Guidance

BAT 35 to 39 should be considered together.

6. Preservative application process

BAT 36. In order to prevent accidental leakage and emissions of treatment chemicals from non-pressure processes, BAT is to use one of the techniques given below.

Technique	
a.	Double-walled treatment vessels with automatic leak detection devices
b.	Single-walled treatment vessels with sufficiently large and wood-preservative-resistant containment, fender and automatic leak detection device

UK Interpretation Guidance

BAT 35 to 39 should be considered together.

BAT 37. In order to reduce emissions of aerosols from wood and wood products preservation using water-based treatment chemicals, BAT is to enclose spraying processes, collect overspray and reuse it in the preparation of wood preservation solution.

UK Interpretation Guidance

BAT 35 to 39 should be considered together.

BAT 38. In order to prevent or reduce emissions of treatment chemicals from pressure processes (autoclaves), BAT is to use all of the techniques given below.

Technique		Description
a.	Process controls to prevent operation unless the treatment vessel door is locked and sealed	The treatment vessel door is locked and sealed once the treatment vessel is loaded and before treatment takes place. Process controls are in place that prevent the operation of the treatment vessel unless the door is locked and sealed.
b.	Process controls to prevent the treatment vessel from opening while it is pressurised and/or filled with preservative solution	Process controls display the pressure and whether liquid is present in the treatment vessel. They prevent the opening of the treatment vessel while it is still pressurised and/or filled.
c.	Catch-lock for the treatment vessel door	The door of the treatment vessel is equipped with a catch-lock to prevent the release of liquids in the event that the treatment vessel door needs to be opened in an emergency situation (e.g. door seal is broken). The catch-lock permits the door to be partially opened to release the pressure while retaining liquids.
d.	Use and maintenance of safety relief valves	Treatment vessels are fitted with safety relief valves to protect the vessels from excessive pressure. Discharges from valves are directed to a tank of sufficient capacity. Safety relief valves are regularly inspected (e.g. once every 6 months) for signs of corrosion, contamination or incorrect fitting and are cleaned and/or repaired as required.
e.	Control of emissions to air from the vacuum pump exhaust	Air extracted from pressure treatment vessels (i.e. the vacuum pump outlet) is treated (e.g. in a vapour-liquid separator).
f.	Reduction of emissions to air when opening the treatment vessel	Sufficient time for dripping and condensation is allowed between the depressurisation period and the opening of the treatment vessel.
g.	Application of a final vacuum to remove excess treatment chemicals from the surface of treated wood	To avoid dripping, a final vacuum is applied in the treatment vessel before opening it to remove excess treatment chemicals from the surface of treated wood. Application of a final vacuum may not be necessary if the removal of excess treatment chemicals from the surface of treated wood is ensured by the application of an appropriate initial vacuum (e.g. less than 50 mbar).

UK Interpretation Guidance

BAT 35 to 39 should be considered together.

BAT 39. In order to reduce energy consumption in pressure processes (autoclaves), BAT is to use variable pump control.

Description

After reaching the required working pressure, the treatment system is switched to a pump with reduced power and energy consumption.

Applicability

Applicability may be limited in the case of oscillating pressure processes.

UK Interpretation Guidance

BAT 35 to 39 should be considered together.

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning.

Some of the techniques in BAT 35 to 39 may not be applicable to some activities. BAT 36 to 38 are alternative methods of wood treatment. Some operators may only use one of these techniques.

BAT 35 applies to both pressure and non-pressure systems, whereas BAT 36 and 37 applies to non-pressure systems (i.e. dip or spray). BAT 38 and 39 applies to pressure systems only. BAT 39 is an energy saving measure and only applicable where BAT 38 is used.

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning. Where other techniques are used, operators should indicate how these techniques achieve at least an equivalent level of environmental performance.

Once complete, a summary of the review should be included as an operating technique in the permit.

7. Post-treatment conditioning and interim storage

BAT 40. In order to prevent or reduce the contamination of soil or groundwater from the interim storage of freshly treated wood, BAT is to allow sufficient dripping time after treatment and to remove the treated wood from the contained/bunded area only once it is deemed dry.

Description

To allow the surplus treatment chemicals to drip back into the treatment vessel, treated wood/wood packs are held in the contained/bunded area (e.g. above the treatment vessel or over a dripping pad) for a sufficient time after the treatment and before transfer to the post-treatment drying area. Then, before leaving the post-treatment drying area, treated wood/wood packs are, for example, lifted by mechanical means and suspended for a minimum of 5 minutes. If no dripping of treatment solution occurs, the wood is deemed to be dry.

UK Interpretation Guidance

BAT 40 should be reviewed alongside BAT 34 (d) to (f) and BAT 46.

It is important that the treated wood is dried in an area which is both covered and bunded such that any residues are contained and do not enter into the ground or water. Once the wood is dry, it can be safely stored on any surface.

Note: BAT 40 does not give an indication of how long the wood will need to be stored in the post-treatment area before it can be moved.

The lifting technique in the second part of the description in BAT 40 is a technique to test whether the wood is sufficiently dry for it to be moved from the post-treatment drying area and is strongly recommended. Operators using a different technique must demonstrate how they ensure the wood is dry before it is stored in an unprotected area.

Once complete, a summary of the review should be included as an operating technique in the permit.

8. Waste management

BAT 41. In order to reduce the quantity of waste sent for disposal, especially of hazardous waste, BAT is to use the techniques (a) and (b) and one or both of the techniques (c) and (d) given below.

Technique		Description
a.	Removal of debris prior to treatment	Debris (e.g. sawdust, woodchips) is removed from the surface of the wood/wood products before treatment.
b.	Recovery and reuse of waxes and oils	When waxes or oils are used for impregnation, surplus waxes or oils from the impregnation process are recovered and reused.
c.	Bulk delivery of treatment chemicals	Delivery of treatment chemicals in tanks to reduce the amount of packaging.
d.	Use of reusable containers	Reusable containers used for treatment chemicals (e.g. intermediate bulk containers) are returned to the supplier for reuse.

UK Interpretation Guidance

BAT 41 and 42 should be reviewed together, along with BAT 48 when there are waste streams arising from the use of creosote.

BAT 42. In order to reduce the environmental risk related to waste management, BAT is to store waste in suitable containers or on sealed surfaces and to keep hazardous waste separately in a designated weather-protected and contained/bunded area.

UK Interpretation Guidance

BAT 41 and 42 should be reviewed together, along with BAT 48 when there are waste streams arising from the use of creosote.

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning. Some of the techniques in BAT 41 and 42 may not be applicable to some activities. Where other techniques are used, operators should indicate how these techniques achieve at least an equivalent level of environmental performance.

Once complete, a summary of the review should be included as an operating technique in the permit.

9. Monitoring

9.1 Emissions to water and groundwater quality

BAT 43. BAT is to monitor pollutants in waste water and potentially contaminated surface run-off water prior to each batch discharge in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Substance / Parameter	Standard(s)
Biocides (1)	EN standards might be available depending on the composition of the biocidal products
Cu (2)	Various EN standards available (e.g. EN ISO 11885, EN ISO 17294-2, EN ISO 15586)
Solvents (3)	EN standards available for some solvents (e.g. EN ISO 15680)
PAHs (4)	EN ISO 17993
Benzo[*a*]pyrene (4)	EN ISO 17993
HOI	EN ISO 9377-2
(1) Specific substances are monitored, depending on the composition of the biocidal products in use in the process. (2) The monitoring only applies if copper compounds are used in the process. (3) The monitoring only applies to plants using solvent-based treatment chemicals. Specific substances are monitored, depending on the solvents in use in the process. (4) The monitoring only applies to plants using creosote treatment.	

UK Interpretation Guidance

There are no BAT-AELs for emissions to water and sewer. However this does not mean that emissions don't need to be monitored. Neither does it mean that ELVs for emissions can't be set when they are appropriate or needed. This is considered further under BAT 47.

Emissions to water or sewer, where appropriate, need to be monitored and reported as part of permit conditions.

9.2 Groundwater quality

BAT 44. BAT is to monitor pollutants in groundwater with a frequency of at least once every 6 months and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

The monitoring frequency may be reduced to once every 2 years based on a risk assessment or if pollutant levels are proven to be sufficiently stable (e.g. after a period of 4 years).

Substance / Parameter (1)	Standard(s)
Biocides (2)	EN standards might be available depending on the composition of the biocidal products (e.g. EN ISO 27108)
As	Various EN standards available (e.g. EN ISO 11885, EN ISO 17294-2, EN ISO 15586
Cu	
Cr	
Solvents (3)	EN standards available for some solvents (e.g. EN ISO 15680)
PAHs	EN ISO 17993
Benzo[*a*]pyrene	EN ISO 17993
HOI	EN ISO 9377-2
(1) The monitoring may not apply if the substance concerned is not used in the process and if the groundwater is proven not to be contaminated with this substance. (2) Specific substances are monitored, depending on the composition of biocidal products which are used or were previously used in the process. (3) The monitoring only applies to plants using solvent-based treatment chemicals. Specific substances are monitored, depending on the solvents in use in the process.	

UK Interpretation Guidance

It is important to note that this refers to the measurement of actual pollution rather than emissions. BAT 44 should be read alongside Articles 16 and 22 of the IED and Commission Guidance 2014/C 136/03 on Baseline Reports.

In the absence of a risk assessment, groundwater monitoring every 6 months will be the default position. Note, this is much more frequent than the requirements of Article 16 of IED, which is once every 5 years. This reflects the fact that groundwater pollution represents the biggest environmental risk for this sector.

The location of sampling points should be based on the site (baseline) report and agreed between the regulator and operator.

If there is no baseline report in existence, then this must be carried out in line with the European Commission Guidance.

If having applied the Guidance, a quantified assessment of soil and groundwater pollution is not required (see stage 7 of the procedure), then groundwater monitoring is not required unless there is a pollution incident which results in potential soil or groundwater contamination, in which case the matter should be reassessed. This is only likely to be the case for new installations with no previous history of timber treatment applying all the relevant groundwater protection measures contained in this document.

In the circumstances where a quantified assessment has been made or is required, a risk assessment must be done before the monitoring frequency can be reduced. This can be done as part of the permit review or at any time thereafter. If the monitoring frequency is initially set at once every 6 months, a review should be carried out after 4 years. The monitoring frequency should not be reduced unless all of the measures in BAT 34 (d) to (f), BAT 40 and BAT 46 have been implemented. The monitoring frequency should not be reduced beyond once every 2 years.

Note: the requirement to monitor soil every 10 years under Article 16 is not affected by BAT 44. As with groundwater monitoring, where this is required, the location of sampling points should be based on the site report and agreed between the regulator and operator.

9.3 Emissions in waste gases

BAT 45. BAT is to monitor emissions in waste gases with a frequency of at least once every year and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.

Parameter	Process	Standard(s)	Monitoring associated with
TVOC ([1])	Wood and wood products preservation using creosote and solvent-based treatment chemicals	EN 12619	BAT 49, BAT 51
PAHs ([1]) ([2])	Wood and wood products preservation using creosote	No EN standard available	BAT 51

Parameter	Process	Standard(s)	Monitoring associated with
NO_X ([3])	Wood and wood products preservation using creosote and solvent-based treatment chemicals	EN 14792	BAT 52
CO ([3])		EN 15058	

([1]) To extent possible, the measurements are carried out at the highest expected emission state under normal operating conditions.
([2]) This includes: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene.
([3]) The monitoring only applies to emissions from the thermal treatment of off-gases.

UK Interpretation Guidance

Note: BAT 45 does not apply to exclusively water based plants.

For processes using solvents, it is important to differentiate between emissions in waste gases and fugitive emissions. When calculating solvent mass balances for calculating fugitive and/or total emissions, it is important to understand that TVOC emissions from waste gases contribute to the term 'O1' in the mass balance calculation

Emissions in waste gases might be abated or unabated. The presence or absence of abatement is immaterial to whether or not an emission should be monitored. Emissions from pressure vessels / autoclaves, vents from non-pressurised treatment vessels and ventilated spray booths should all be considered as waste gases.

Whilst there is no EN standard for PAHs, there is an ISO standard which should be used, BS ISO 11338.

10. Emissions to soil and groundwater

BAT 46. In order to prevent or reduce emissions to soil and groundwater, BAT is to use all of the techniques given below.

Technique		Description
a.	Plant and equipment containment or bund	The parts of the plant in which treatment chemicals are stored or handled, i.e. treatment chemicals storage area, treatment, post-treatment conditioning and interim storage areas (comprising treatment vessel, working vessel, unloading/pull-out facilities, dripping/drying area, cooling zone), pipes and ductwork for treatment chemicals, and creosote (re) conditioning facilities, are contained or bunded. Containments and bunds have impermeable surfaces, are resistant to treatment chemicals and have sufficient capacity to capture and hold the volumes handled or stored in the plant/equipment. Drip trays (made of treatment-chemical-resistant material) may also be used as local containments for the collection and recovery of drips and spills of treatment chemicals from critical equipment or processes (i.e. valves, inlets/outlets of storage tanks, treatment vessels, working tanks, unloading/pull-out zones, handling of freshly treated wood, cooling/drying zone). The liquids in the containments/bunds and drip trays are collected to recover the treatment chemicals for their reuse in the treatment chemicals system. Sludge generated in the collection system is disposed of as hazardous waste.

Technique		Description
b.	Impermeable floors	Floors of areas which are not contained or bunded, and where drips, spills, accidental releases or leaching of treatment chemicals may occur are impermeable to the substances concerned (e.g. storage of treated wood on impermeable floors in the event that it is required in the BPR authorisation for the wood preservative used for the treatment). The liquids on the floors are collected to recover the treatment chemicals for their reuse in the treatment chemicals system. Sludge generated in the collection system is disposed of as hazardous waste.
c.	Warning systems for equipment identified as 'critical'	'Critical' equipment (see BAT 30) is equipped with warning systems to indicate malfunctions.
d.	Prevention and detection of leaks from underground storage and ductwork for harmful/hazardous substances and record-keeping	The use of underground components is minimised. When underground components are used for the storage of harmful/hazardous substances, secondary containment (e.g. double-walled containment) is put in place. Underground components are equipped with leak detection devices. Risk-based and regular monitoring of underground storage and ductwork is carried out to identify potential leakages; when necessary, leaking equipment is repaired. A record is kept of incidents that may cause soil and/or groundwater pollution.
e.	Regular inspection and maintenance of plant and equipment	The plant and the equipment are regularly inspected and serviced to ensure proper functioning; this includes in particular checking the integrity and/or leak-free status of valves, pumps, pipes, tanks, pressure vessels, drip trays, and containments/bunds and the proper functioning of warning systems.
f.	Techniques to prevent cross-contamination	Cross-contamination (i.e. the contamination of plant areas that usually do not come into contact with treatment chemicals) is prevented by using appropriate techniques such as: • design of drip-trays in such a way that forklifts are not in contact with potentially contaminated surfaces of the drip-trays; • design of charging equipment (used to remove treated wood from the treatment vessel) in such a way that a carry-over of treatment chemicals is prevented; • use of a crane system for handling treated wood; • use of dedicated transport vehicles for potentially contaminated areas; • restricted access to potentially contaminated areas; • use of grit walkways.

UK Interpretation Guidance

BAT 46 should be reviewed alongside BAT 34 (d) to (f) and BAT 40.

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning. Where other techniques are used, operators should indicate how these techniques achieve at least an equivalent level of environmental performance.

Note implementing the measures set out in BAT 34 (d) to (f), BAT 40 and BAT 46 are key to reducing the monitoring frequency for groundwater quality.

Once complete, a summary of the review should be included as an operating technique in the permit.

11. Emissions to water and waste water management

BAT 47. In order to prevent or, where that is not practicable, to reduce emissions to water and to reduce water consumption, BAT is to use all of the techniques given below.

Technique		Description	Applicability
a.	Techniques to prevent contamination of rain and surface run-off water	Rain and surface run-off water are kept separated from areas where treatment chemicals are stored or handled, from areas where freshly treated wood is stored and from contaminated water. This is achieved by using at least the following techniques: • drainage channels and/or an outer kerb bund around the plant; • roofing with roof guttering of areas where treatment chemicals are stored or handled (i.e. treatment chemicals' storage area, treatment, post-treatment conditioning and interim storage areas; pipes and ductwork for treatment chemicals; creosote (re)conditioning facilities); • weather protection (e.g. roofing, tarpaulins) for the storage of treated wood in the event that it is required in the BPR authorisation for the wood preservative used for the treatment.	For existing plants, the applicability of drainage channels and an outer kerb bund may be restricted by the size of the plant area.
b.	Collection of potentially contaminated surface run-off water	Surface run-off water from areas that are potentially contaminated with treatment chemicals is collected separately. Collected waste water is discharged only after appropriate measures are taken (e.g. monitor (see BAT 43), treat (see BAT 47(e)), use (see BAT 47(c)).	Generally applicable.
c.	Use of potentially contaminated surface run-off water	After its collection, potentially contaminated surface run-off water is used for the preparation of water-based wood preservative solutions.	Only applicable to plants using water-based treatment chemicals. Applicability may be restricted by the quality requirements for its intended use.
d.	Reuse of cleaning water	Water used to wash equipment and containers is recovered and reused in the preparation of water-based wood preservative solutions.	Only applicable to plants using water-based treatment chemicals.
e.	Treatment of waste water	Where contamination in the collected surface runoff water and/or cleaning water is detected or can be expected, and where the use of the water is not feasible, the waste water is treated in an adequate waste water treatment plant (on or off site).	Generally applicable.
f.	Disposal as hazardous waste	Where contamination in the collected surface runoff water and/or cleaning water is detected or can be expected, and where the treatment or use of the water is not feasible, the collected surface run-off water and/or cleaning water is disposed of as hazardous waste.	Generally applicable.

UK Interpretation Guidance

Most timber treatment facilities collect the spent liquids for reuse in the process. There will be a need for periodic de-sludging of tanks, which will normally be carried out by a specialist waste contractor and removed by road tanker.

Because of the potential for waste water to contain biocides, only the discharge of clean uncontaminated surface water should be permitted. Any surface areas with the potential to become contaminated, in particular the drying area immediately post treatment, must be segregated from the main drainage system and any surface waters collected for use in the process.

The discharge of biocides to the sewer system could harm the downstream sewage treatment plant, whereas direct discharge to a water course is likely to be harmful to the aquatic environment.

In the unlikely event of there being a direct discharge to water, ELVs will be needed to protect quality of the receiving water. In England, you should consult with the Environment Agency. In Wales, consultation should be with Natural Resources Wales. In Scotland and Northern Ireland, the regulator will be able to advise directly.

For indirect discharges, i.e. discharge of waste water to sewer. You must check that there is a trade effluent consent in place. If there is no trade effluent consent, discharge should not be permitted. There is no need to replicate the ELVs in the trade effluent consent.

However, in both cases, monitoring results should be reported.

BAT 48. In order to reduce emissions to water from wood and wood products preservation using creosote, BAT is to collect the condensates from the depressurisation and vacuum operation of the treatment vessel and from creosote (re)conditioning and either treat them on site using an activated carbon or sand filter or dispose of them as hazardous waste.

Description

Condensate volumes are collected, allowed to settle and treated in an activated carbon or sand filter. The treated water is either reused (closed circuit) or discharged to the public sewer system. Alternatively, the collected condensates may be disposed of as hazardous waste.

UK Interpretation Guidance

If condensates are discharged to the sewer, the operator must have a trade effluent consent that allows the discharge. The conditions attached to the trade effluent consent do not need to be replicated in the permit, but the regulator should check that it is in place.

From time to time there will be a need to dispose of the spent activated carbon or sand filter materials. This will be hazardous waste.

The permit should include a condition for the operator to report the quantity of hazardous waste sent for disposal.

Where there are waste streams arising from the use of creosote, BAT 48 should be considered alongside BAT 41 and 42.

12. Emissions to air

BAT 49. In order to reduce emissions of VOCs to air from wood and wood products preservation using solvent-based treatment chemicals, BAT is to enclose the emitting equipment or processes, extract off-gases and send them to a treatment system (see techniques in BAT 51).

UK Interpretation Guidance

BAT 49 to 52 should be reviewed together, along with BAT 34 (a) to (c).

Note: BAT 49 does not apply to installations which only use water based treatment chemicals.

BAT 50. In order to reduce emissions of organic compounds and odour to air from wood and wood products preservation using creosote, BAT is to use low-volatility impregnating oils, i.e. Grade C creosote instead of Grade B.

Applicability

Grade C creosote may not be applicable in the case of cold climatic conditions.

UK Interpretation Guidance

BAT 49 to 52 should be reviewed together, along with BAT 34 (a) to (c).

Note: BAT 50 does not apply to installations which do not use creosote.

If odour exists at a level likely to cause pollution outside the installation boundary, the regulator may wish to consider whether an odour management plan should be required.

BAT 51. In order to reduce emissions of organic compounds to air from wood and wood products preservation using creosote, BAT is to enclose emitting equipment or processes (e.g. storage and impregnation tanks, depressurisation, creosote reconditioning), extract off-gases and use one or a combination of the treatment techniques given below.

Technique		Description	Applicability
a.	Thermal oxidation	See BAT 15 (i). Exhaust heat can be recovered by means of heat exchangers.	Generally applicable.
b.	Sending off-gases to a combustion plant	Part or all of the off-gases are sent as combustion air and supplementary fuel to a combustion plant (including CHP (combined heat and power) plants) used for steam and/or electricity production.	Not applicable for off-gases containing substances referred to in IED Article 59(5). Applicability may be restricted due to safety considerations.

Technique		Description	Applicability
c.	Adsorption using activated carbon	Organic compounds are adsorbed on the surface of activated carbon. Adsorbed compounds may be subsequently desorbed, e.g. with steam (often on site) for reuse or disposal and the adsorbent is reused.	Generally applicable.
d.	Absorption using a suitable liquid	Use of a suitable liquid to remove pollutants from the off-gases by absorption, in particular soluble compounds.	Generally applicable.
e.	Condensation	A technique for removing organic compounds by reducing the temperature below their dew points so that the vapours liquefy. Depending on the operating temperature range required, different refrigerants are used, e.g. cooling water, chilled water (temperature typically around 5 °C), ammonia or propane. Condensation is used in combination with another abatement technique.	Applicability may be restricted where the energy demand for recovery is excessive due to the low VOC content.

UK Interpretation Guidance

BAT 49 to 52 should be reviewed together, along with BAT 34 (a) to (c). This can be implemented as an improvement condition, see Annex II.

BAT 51 applies to installations using solvent based treatment chemicals as well as those using creosote.

Note: BAT 15(i) has not been copied across from the STS portion of the BAT conclusions. It reads as follows:

> "Oxidation of VOCs by heating off-gases with air or oxygen to above their auto-ignition point in a combustion chamber and maintaining a high temperature long enough to complete the combustion of VOCs to carbon dioxide and water."

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning. Where other techniques are used, operators should indicate how these techniques achieve at least an equivalent level of environmental performance.

Once complete, a summary of the review should be included as an operating technique in the permit.

Table 36: BAT-associated emission levels (BAT-AELs) for TVOC and PAH emissions in waste gases from wood and wood products preservation using creosote and/or solvent-based treatment chemicals

Parameter	Unit	Process	BAT-AEL (Average over the sampling period)
TVOC	mg C/Nm^3	Creosote and solvent-based treatment	< 4–20
PAHs	mg/Nm^3	Creosote treatment	< 1 ([1])
([1]) The BAT-AEL refers to the sum of the following PAH compounds: acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, phenanthrene and pyrene.			

The associated monitoring is given in BAT 45.

UK Interpretation Guidance

The ELV for emissions in waste gases applies to each emission point where monitoring takes place – see BAT 45.

There should also be an assessment of the environmental impact of all emissions to air.

The ELV should be set at 20 mg/Nm^3, for TVOC and 1 mg/Nm^3, for PAHs. A lower ELV should be set in the event that any of following circumstances apply:

- If the ELV is currently set lower than this, the ELV should be left unchanged.
- In Scotland, as a result of a site specific BAT assessment.
- To take account of the findings of the environmental impact assessment.

As well as the BAT-AELs for channelled emissions, for those installations using solvents, there are emission limit values for fugitive or total emissions set in Annex VII, Part 2 of IED. Operators are also expected to comply with one of these emission limits. Currently these are set at:

- A fugitive limit of 45% of solvent input for existing plant, or
- A total limit of 11 Kg/m^3 for new plant.

BAT 52. In order to reduce NO_X emissions in waste gases while limiting CO emissions from the thermal treatment of off-gases in wood and wood products preservation using creosote and/or solvent-based treatment chemicals, BAT is to use technique (a) or both of the techniques given below.

	Technique	Description	Applicability
a.	Optimisation of thermal treatment conditions (design and operation)	See BAT 17(a).	Design applicability may be restricted for existing plants.
b.	Use of low-NO_X burners	See BAT 17(b).	The applicability may be restricted at existing plants by design and/or operational constraints.

UK Interpretation Guidance

BAT 49 to 52 should be reviewed together, along with BAT 34 (a) to (c). This can be implemented as an improvement condition, see Annex II.

When carrying out the review, operators must describe which of the techniques are applied. Where techniques are not used, operators should give their reasoning. Where other techniques are used, operators should indicate how these techniques achieve at least an equivalent level of environmental performance.

BAT 52 deals with minimising NO_X and CO from thermal oxidisers, so is not applicable when non-thermal abatement techniques are being used.

Note: BAT 17(a) and (b) have not been copied across from the STS portion of the BAT conclusions. It reads as follows:

BAT 17(a) Good design of the combustion chambers, burners and associated equipment/devices is combined with optimisation of combustion conditions (e.g. by controlling combustion parameters such as temperature and residence time) with or without the use of automatic systems and the regular planned maintenance of the combustion system according to suppliers' recommendations.

BAT 17(b) The peak flame temperature in the combustion chamber is reduced, delaying but completing the combustion and increasing the heat transfer (increased emissivity of the flame). It is combined with increased residence time in order to achieve the desired VOC destruction.

Once complete, a summary of the review should be included as an operating technique in the permit.

Table 37: BAT-associated emission level (BAT-AEL) for NOX emissions in waste gases and indicative emission level for CO emissions in waste gases to air from the thermal treatment of off-gases in wood and wood products preservation using creosote and/or solvent-based treatment chemicals

Parameter	Unit	BAT-AEL ([1]) (Average over the sampling period)	Indicative emission level ([1]) (Average over the sampling period)
NO_X	mg/Nm^3	20–130	No indicative level
CO		No BAT-AEL	20–150
([1]) The BAT-AEL and indicative level do not apply where off-gases are sent to a combustion plant.			

The associated monitoring is given in BAT 45.

UK Interpretation Guidance

There should also be an assessment of the environmental impact of all emissions to air. Emission limit values (ELVs) may not exceed the BAT-AEL.

For consistency with the STS sector, UK guidance is to set an ELV for NO_X, no higher than 100 mg/Nm^3. A lower ELV may be set, based on the performance of the plant, provided that the CO level does not exceed 100 mg/Nm^3. Where nitrogen containing solvents are used, an ELV greater than 100 mg/Nm^3 up to a maximum of 300 mg/Nm^3 can be set. In this case, an individual assessment should be made. Regulators should aim to keep the ELV as low as practicable and should not default to the 300 mg/Nm^3 figure. In all cases, an ELV of 100 mg/Nm^3 for CO emissions shall be included in the permit, unless one of the circumstances described below apply.

An ELV, lower than that described above should be set in the event that:

- The ELV is currently set lower than this, the ELV should be left unchanged.
- In Scotland, as a result of a site specific BAT assessment.
- To take account of the findings of the environmental impact assessment.

13. Noise

BAT 53. In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below.

Technique	
Storage and handling of raw materials	
a.	Installation of noise walls and utilisation/optimisation of the noise-absorbing effect of buildings
b.	Enclosure or partial enclosure of noisy operations
c.	Use of low-noise vehicles/transport systems
d.	Noise management measures (e.g. improved inspection and maintenance of equipment, closing of doors and windows)
Kiln drying	
e.	Noise reduction measures for fans

Applicability

The applicability is restricted to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated.

UK Interpretation Guidance

This is addressed by the standard permit conditions.

The need for a site specific noise management plan is for the Regulator to determine as part of the permit review.

Annex I – Interpretation of Capacity

Where the Regulations define an activity depending on its capacity, (in this case production capacity), it is for operators to determine the relevant production capacity for approval by the regulator.

Production capacities for all sectors obligated under IED are calculated on the greatest potential throughput for the site to ensure that sites are correctly identified.

Production capacity is not determined by actual output or throughput but by potential output which is only limited by technical or legal restrictions.

An example of a technical restriction would be by volume of a treatment vessel as described in the section on calculating production capacity.

Drying area is not a technical restriction as there is no physical constraint in place, i.e. it is possible to override the constraint through inappropriate operation.

An example of a legal restriction would be a limitation on operating hours such as by control under a planning consent which prevents the installation from running over a 24 hour time period.

Where a plant operates less than 24 hours per day by choice of the operator, this does not count as a legal or technical restriction on capacity. This includes the provision of any software locks that might be installed.

When the operator has more than one treatment vessel in different parts of the same site, the production capacities must be added together.

Calculating Production Capacity

For the treatment of wood the technical constituents of the process will not change for differing products. The only variation is normally in treatment cycle times.

The operator should consider the treatment cycle that has the **shortest** cycle time and should calculate on this basis as follows:-

Production Capacity = N x V

Where: - N = Number of production cycles carried out in a 24 hour period
V = Volume of wood treated in each cycle

Calculating N – number of production cycles in a 24 hour period

N will be determined by the process control system and should be based on the wood species and treatment classification with the shortest cycle time which the site can operate.

Treatment classifications are specified by BS8417:2011 Preservation of wood – Code of practice. Classifications range from 1 - 4 with 1 being the shortest cycle time. The cycle time will also be dependent on the wood species being treated as woods have a differing ability to take up treatment chemicals depending on their cell structure and sap content.

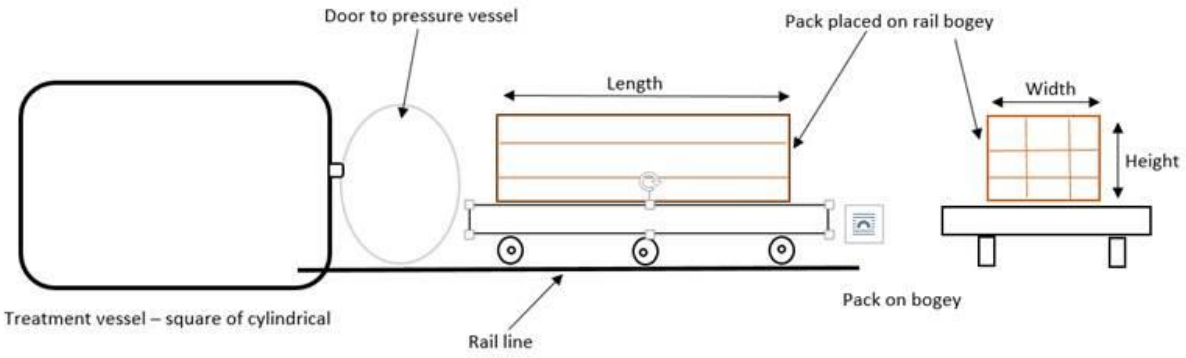
Cycle times can range from around 65 minutes for red wood treated to class 1, to up to 295 minutes for whitewood treated to class 4. Note: all water based treatment sites will all be capable to treat to Class 1.

N will also include the time taken to load and unload the plant loading system with wood to be treated as this will be a factor in the number of production cycles achievable. This loading and unloading time will be directly related to the operational practices operating on site with single rail systems which require to be unloaded and reloaded by a single vehicle having the longest times while automated systems with multiple lines being the quickest. As the vessels are unproductive during loading/unloading, operators will want to limit this time.

This means that a site with an actual throughput of less than 75 m^3/day may still be within scope of these BAT conclusions because their capacity (based on the wood with the shortest cycle time is more than 75 m^3/day).

Calculating V – volume of treated wood

V is determined by calculating the volume of treatment space within the treatment vessel. When determining V, it will be assumed that the plant is fully loaded (see BAT 35). As each site will only treat wood packs that are attached to a plant loading system and as this system is site dependant it will be practicable to calculate volume based on the maximum pack size using a simple length x breadth x height, taking into account the use of spacers to allow the free flow of treatment chemicals around the pack.



Where there is more than one treatment vessel in use, the production capacity for each individual vessel should be separately calculated and then added together to give a daily production capacity for the installation.

Wood impregnation with organic solvents

Where wood impregnation is with organic solvents, these sites also come within scope of the STS BAT conclusions.

Sites treating more than 75 m^3/day of timber with solvent based chemicals will inevitably have a solvent consumption capacity of more than 200 tonnes per year and so will need to comply with those BAT conclusions for Surface Treatment with Organic Solvents, which are relevant as well as those for Wood Preservation with Chemicals.

Annex II – Draft Information Requests / Improvement Conditions

The text below can be used by regulators either as the basis for information requests or for writing improvement conditions when carrying out permit reviews.

1. The operator will review their Environmental Management System (EMS) against the requirements of BAT 1 and BAT 30 of the STS BAT Conclusions. The operator will produce and implement an action plan to address those improvements required as a result of the review.

2. The operator will carry out a review to establish whether there are suitable alternative materials that could reduce environmental impact or opportunities to improve the efficiency of raw material and water use, taking account of BAT 31, 32 and 33 of the STS BAT conclusions.

3. The operator will carry out a review of its operating techniques for the preparation and application of wood preservatives within the installation, against the requirements of BAT 35 to 39 of the STS BAT conclusions. The operator will produce a report describing how the installation is BAT, in particular where techniques other than those described in BAT 35 to 39 are used, how these achieve an equivalent level of performance.

4. The operator will carry out a review of its operating techniques for the capture, recovery and treatment of VOCs, against the requirements of BAT 49 to 52 and BAT 34 (a) to (c) of the STS BAT conclusions. The operator will produce a report describing how the installation is BAT, in particular where techniques other than those described BAT 49 to 52 and BAT 34 (a) to (c) are used, how these achieve an equivalent level of performance.

5. The operator will carry out a review of its operating techniques for the protection of soil and groundwater, against the requirements of BAT 40, 46 and BAT 34 (d) to (f) of the STS BAT conclusions. The operator will produce a report describing how the installation is BAT, in particular where techniques other than those described are used, how these achieve an equivalent level of performance.

6. The operator will carry out a review of the avoidance, recovery and disposal of wastes, taking account of BAT 41, 42 and 48 of the STS BAT conclusions.

7. The operator will carry out a review of its operating techniques for minimising direct and indirect emissions to water, against the requirements of BAT 47 of the STS BAT conclusions. The operator will produce a report describing how the installation is BAT, in particular where techniques other than those described in BAT 47 are used, how these achieve an equivalent level of performance.