

This draft document should not be used for reference until the final version is published (expected at the end of 2025).



**Best Available Techniques**  
UK BAT

# UK Best Available Techniques

## Draft Interpretation Guidance and Supporting Information for the Ferrous Metals Processing (Forming) Sector

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

## Contents

|  |    |
|--|----|
| Supporting information and interpretation document.....                                    | 3  |
| Outcomes from the UK BAT process .....   | 3  |
| UK BAT process .....   | 3  |
| Scope of review.....   | 4  |
| Overview of regulated installations in the UK .....  | 5  |
| Key environmental and technical issues.....  | 6  |
| Interpretation and implementation .....  | 7  |
| Climate change and circular economy.....   | 7  |
| Definition of other than normal operating conditions (OTNOC).....                          | 7  |
| BAT 3: Chemicals management plan .....   | 7  |
| BAT 6: Monitoring of channelled emissions to air.....                                      | 8  |
| BAT 7: Monitoring of emissions to water of hexavalent chromium .....                       | 9  |
| BAT 7: Monitoring of emissions to water for hydrocarbon oil index emissions to water ..... | 9  |
| BAT 9: Energy efficiency and BAT10: Energy efficiency in heating .....                     | 10 |
| BAT 13f: Material efficiency in pickling.....  | 10 |
| BAT 17: Recovery of pickling acids.....  | 10 |
| BAT 35: Emissions to air from heating (dust) .....   | 11 |
| BAT 37: Emissions to air of NO <sub>x</sub> from heating .....                             | 11 |
| BAT 39: Emissions to air from pickling.....  | 12 |
| BAT 42: Emissions to air from oiling.....  | 12 |
| BAT 54: Emissions to water .....   | 13 |
| Consensus agreement to the BATC.....   | 14 |
| Public consultation .....  | 14 |
| Formal adoption .....  | 14 |

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

## Supporting information and interpretation document

Following the review of the Ferrous Metals Processing (Forming) (FMPF) sector the Technical Working Group (TWG) has reached consensus on BAT for the UK, with no alternate positions.

This document is a summary of the process followed to develop Best Available Technique Conclusions (BATC) in the UK for the FMPF sector. It includes supporting information discussed by the Technical Working Group (TWG) and interpretation on a number of matters raised as the TWG members discussed and agreed the Formal BATC.

The agreed BATC are based on the outputs from the EU BREF process, which UK representatives participated in up to 31 January 2020, along with comments and evidence provided by the TWG members. This includes evidence available from current industry practice, sector activities and regulatory submissions within a UK context. Original comments made by the UK Shadow TWG were also reviewed and reconsidered as part of the development of BAT for the UK.

### Outcomes from the UK BAT process

Implementation of the BAT Conclusions for the FMPF sector will ensure that the UK meets global climate and environmental challenges through driving environmental improvements whilst allowing sustainable business development and a level playing field.

The BAT Conclusions will introduce updated techniques through which emissions can be reduced or minimised. They will also introduce new evidence based BAT-AEL's, reducing emissions from the sector, as part of the continuous process of improvement through the development and review of BAT in the UK.

### UK BAT process

The process for developing BAT for the UK was set up in 2022. This involves the organisation of an information exchange between UK Government, Devolved Administrations, Regulators, industry and environmental non-governmental organisations on Best Available Techniques (BAT) used to control industrial pollution.

The process is mandated by the Environment and Wildlife (Legislative Functions) (EU Exit) Regulations 2019, specifically Part 3, with the power to make decisions on BAT Conclusions for the purposes of Directive 2010/75/EU as enabled by section 8(1) of, and paragraph 21(b) of Schedule 7 to, the European Union (Withdrawal) Act 2018(1).

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

The BAT conclusions cover large-scale agro-industrial activities included in Annex I to the Industrial Emissions Directive (2010/75/EU). They comprise a short description of the best available techniques identified, their applicability and associated emission or consumption levels.

The definition of BAT in UK law remains unchanged following EU exit and it forms part of our retained EU law alongside all existing BATC that were developed at the EU level (largely on a sector-by-sector basis). The BAT regime operates on the same basis of a transparent, collaborative, flexible, evidence led process that safeguards and builds on the high levels of environmental protection already in place across the UK.

After publication as a Statutory Instrument in the UK, the BATC will provide the reference for setting emission limit values and issuing operating permits for in scope industrial installations in the UK.

The BATC associated with this paper are one of four carried out in tranche 1 of the UK BAT process.

## Scope of review

The FMPF BATC were formed when the FMP scope was split into 2 separate parts (Forming and Galvanising) to match the UK context in which they will apply.

The scope was based on the EU BREF review of which the UK was part. All the references to the relevant UK legislation, are set out in the formal draft of the UK BAT Conclusions.

The UK Ferrous Metals Processing (Forming) BAT Conclusions therefore include all the activities covered by the EU Ferrous Metals Processing scope except for Batch Galvanizing.

In the UK the batch galvanizing activities have been considered separately and a separate BAT Conclusions document developed for this part of the industry. This is because in England and Wales, batch galvanizing is regulated by local authorities, whereas all the installations covered by this set of BAT conclusions are regulated by the National Regulator. Batch galvanizing in Scotland and Northern Ireland is regulated by the National Regulator. Batch galvanizing currently also has its own separate guidance.

It should be noted that BAT Conclusions apply without prejudice to other legislation, which may be relevant, for example on the registration, evaluation, authorisation and restriction of chemicals (REACH), or on the classification, labelling and packaging (CLP) Regulation.

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

## Overview of regulated installations in the UK

Based on the scope of the review, in 2023, the ferrous metals processing (forming) sector had 21 permitted installations in the UK. The industry includes hot rolling mill sites, some of which are part of wider integrated iron and steel works at Port Talbot and Scunthorpe, continuous hot dip (galvanizing) coating sites, wire drawing sites and cold rolling activities.

The sites are shared across the UK in the following way:

Scotland – 1 permitted site.

Northern Ireland – No permitted sites.

England – 13 permitted sites.

Wales – 7 permitted sites.

All the above sites are regulated by the relevant national regulator.

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

## Key environmental and technical issues

The key environmental impacts were discussed and agreed at part of the EU process to develop BAT which included representatives from the UK. The published EU BREF contains full details of the processes and techniques used to minimise pollution from the activities in scope of this review. The evidence collected as part of the EU process was discussed in a UK context with additional data and information provided for specific issues in the subsequent development of BAT for the UK. A record of the main points is presented below to provide further context and interpretation guidance for the BAT conclusions agreed by the TWG.

These BAT conclusions concern all parts of the ferrous metals processing sector, except for Batch Galvanizing. This includes, hot rolling, cold rolling, wire drawing and continuous hot dip coating. For UK BATC relating to the batch galvanising sector please see the separate BATC for this sector.

The UK BAT conclusions for the Ferrous Metals Processing (forming) Sector will replace the EU Reference Document on Best Available Techniques in the Ferrous Metals Processing Industry – December 2001.

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

## Interpretation and implementation

### Climate change and circular economy

The outline draft UK BATC for Tranche 1 contained 3 examples of BAT to ensure operators of permitted installations were able to identify and operate in a manner which supported the move to a circular economy as well as adapting to and mitigating the effects of climate change. Following the review of the outline draft, these 3 draft BATC were removed.

Such BATC were not part of the EU BAT conclusions, and their removal was a policy decision of the Standards Council. The Standards Council remains of the view that addressing circular economy and climate change are BAT and should be taken forward through the BAT system but accepted that these generic BAT proposals were not integrated into the evidence collection and subsequent BATC sufficiently and so instructed the TWG Chair to remove them from all Tranche 1 sectors BATC. The Standards Council will review the approach, consulting stakeholders with revised proposals for future tranches.

### Definition of other than normal operating conditions (OTNOC)

The BATC apply during normal operating conditions. The TWG therefore recognised the importance of clarifying activities outside of normal operating conditions to allow appropriate regulation of installations against the BATC. The definition of OTNOC, which originates in the IED was discussed by the TWG to clarify the meaning of specific terms within it when applied to operations within the sector.

OTNOC includes the use of the word momentary in its definition. The meaning of the word 'momentary' was discussed where integration with other process operations occur. The example of an integrated steel works was discussed where disruptions in the wider integrated works may necessitate use of alternative fuels at a hot rolling facility. As such interruptions are to be expected, and have been designed for, then these may come within the scope of normal operation. The time period defined as OTNOC would therefore depend on the circumstances.

The TWG concluded that the applicability of this condition should be discussed with the regulator depending on the circumstances for a given site.

### BAT 3: Chemicals management plan

Potential duplication of regulation through this BATC was discussed. Aspects of chemical use, storage and control may also be regulated by other legislation such as Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Control of Substances Hazardous to Health (COSHH) and Control of Major Accident Hazards (COMAH). However, the BATC has specific requirements

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

relating to environmental assessment, control and minimisation of hazardous chemicals or substitution with less hazardous chemicals for the environment.

The TWG concluded that these aspects should be included within BAT for the UK to ensure best practice was represented with regards to environmental protection. It was recognised that some aspects of this BATC such as substitution for less hazardous chemicals and minimisation of chemical use can only take place where product specifications allow in the short term. There should be a suitable balance between moving to use of less harmful chemicals wherever possible while not adversely affecting the operation of the site or product quality. The suitability and timeframe over which an exchange to the use of less harmful chemicals may be possible, and what this might mean for other operations of the site or product quality should be discussed between operator and regulator.

## BAT 6: Monitoring of channelled emissions to air

The suitability of monitoring requirements for dust, NO<sub>x</sub> and SO<sub>2</sub> were discussed. The monitoring frequencies for these three substances depend on the mass flow rates of each parameter. The mass flow needs to be assessed to identify the required monitoring frequency. Lower mass flows require lower frequencies of monitoring. Assessments should be representative of variability in the emission over a suitable period of time. This may be possible from existing monitoring returns or it may be necessary to carry out additional monitoring. This is particularly important for dust where emission rates may vary significantly due to discrete events.

The TWG also discussed implementation and setting emission limit values for this BATC. Reference was made to Article 15 of the IED to support this. The main points for each of the pollutants are summarised below:

### Dust monitoring

Dust emissions are likely to be variable with discrete dislodging of scale during the heating process, or from feedstock moving into/out of position within a furnace. This variability in emissions should be considered when establishing the mass flow for each emission point. Mass flow measurements should be representative of the flow over a long period of time.

The TWG concluded that the monitoring requirements were deemed to be appropriate based on the available data from the EU BREF review. This demonstrated that a large number of steel sites across Europe, including some UK sites, were monitoring for dust and that it was appropriate to set a BAT-AEL.

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

### NO<sub>x</sub> monitoring

It was recognised that heating furnaces were usually operated under steady state conditions and that NO<sub>x</sub> emission levels may therefore remain stable in these periods.

The TWG discussed the stability and consistency of NO<sub>x</sub> emissions and whether this may allow operators to present evidence to the regulator through which to request a reduced monitoring frequency, provided this ensured equivalent environmental protection. For example, reducing continuous monitoring requirements to a periodic measurement, if other information such as process monitoring records demonstrated stability and consistency of emissions. As an implementation issue, national regulators will determine such requests on a case-by-case basis.

### SO<sub>2</sub> monitoring

The TWG discussed how it may be possible to calculate emissions where input gases are fully characterised and consistent. An example of the sulphur content of coke oven gas (COG) was discussed. If this was known and consistent, TWG members described how it may support determination of the emission level from subsequent use in reheating furnace through calculation. As an implementation issue, any such approach should be agreed between regulator and operator with appropriate verification steps included as part of implementing this BATC.

Additional aspects of emissions monitoring are included in the sections below for BAT 35, 36 and 37.

## BAT 7: Monitoring of emissions to water of hexavalent chromium

The TWG discussed how by measuring total chromium and pH, an operator could reasonably demonstrate, by calculation, that hexavalent chromium is controlled below the emission limit. The methodology could then be verified by occasional external laboratory analysis. As an implementation issue this would need to be discussed and agreed locally between the regulator and operator.

## BAT 7: Monitoring of emissions to water for hydrocarbon oil index emissions to water

The BATC includes a test for hydrocarbon oil index to water. TWG members highlighted that there were several other test methods used for oil such as ALS methods GEO35, TM 172, GEO46 and TM174. It was agreed that the BATC should define the best available method, BS EN ISO 9377-2. It was also recognised that operators can demonstrate that they are meeting BAT through an alternative monitoring regime. Testing in-house to an alternative test method could be shown to be equivalent by periodic duplicate sampling and verification by an external laboratory to the BS EN ISO 9377-2 method if agreed with the regulator. Alternative test methods may be deemed acceptable if they are of

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

sufficient accuracy to demonstrate compliance with the BAT-AEL. As an implementation issue this would need to be discussed, demonstrated and agreed locally between the regulator and operator.

## **BAT 9: Energy efficiency and BAT10: Energy efficiency in heating**

Some members of the TWG were concerned that these BAT conclusions duplicated other legislative requirements such as Energy Savings and Opportunities Scheme (ESOS), Streamlined Energy and Carbon Reporting (SECR), and UK Emission Trading Scheme (ETS). The different requirements of these schemes were discussed. It was recognised that while there were some overlapping areas there were none of the other schemes which could completely replace the BAT conclusion. Also, energy efficiency measures are one of the basic obligations of the operator in the IED.

The TWG discussed how it may be possible to demonstrate compliance with the energy efficiency parts of the BATC using outputs from other schemes such as ESOS, SECR or ETS, where these provide suitable evidence of how they are meet the BATC. As an implementation issue the operator and the regulator could discuss whether the output from these schemes aligned with the BATC requirements, whether this demonstrated full compliance and whether any additional information or actions were required to meet the BATC.

BAT 10 includes associated environmental performance levels (BAT-AEPLs) for energy efficiency. These levels are based on a normal regular schedule of operation. Factors such as reduced manufacturing demand, shorter operational hours, or frequent start-up/shutdowns can have a significant impact on energy efficiency. When reporting against BAT-AEPLs these factors should be taken into context.

## **BAT 13f: Material efficiency in pickling**

This is a specific technique to increase material efficiency of pickling and reduce the generation of spent pickling acid by using a cleaning circuit to remove particles from the acid followed by reclamation of the free acid by ion exchange. A technical summary of this relating to the ASR plant in Sheffield, which uses HF/H<sub>2</sub>SO<sub>4</sub> acid was put forward during the meeting. It was explained that using this type of system was not feasible for HF/H<sub>2</sub>SO<sub>4</sub> mixed acid as the available technology was not effective for this type of acid and resulted in high sludge levels. It was agreed that this type of system was not BAT for HF/H<sub>2</sub>SO<sub>4</sub> mixed acids.

## **BAT 17: Recovery of pickling acids**

Recovery of spent acid is preferable to neutralisation due to the environmental benefits including energy, material efficiency, and waste hierarchy. It was recognised that there can be situations where options for recovery of acid are

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

not available such as breakdown, logistical issues of collection, and availability of a market. The applicability of this BAT conclusion reflects that although routine use of neutralisation is not BAT there may be exceptional circumstances which mean it is necessary.

### BAT 35: Emissions to air from heating (dust)

Concerns were raised about the BAT-AEL for dust and maintaining compliance with this. For some designs of furnace, the opportunity to prevent dust emissions was limited. One example discussed was a walking hearth furnace with flue situated underneath and a roof mounted flat flame. In this design any dust generated in the furnace would enter the flue at the bottom of the furnace and therefore options to prevent dust emissions were limited. It may not be possible for this type of design to meet the BAT-AEL for dust even if following the BAT techniques listed in BAT 35.

It was also recognised that dust emissions are sometimes generated by discrete events such as scale formation during the heating process, or from dislodged material from moving feedstock into/out of position within the furnace. This situation might lead to a short-term elevated monitoring result where investigation and improvement options might be extremely limited. Appropriate compliance actions required by the regulator would have to be considered in this circumstance. Repeat monitoring would help to establish the underlying causes of any dust emissions or might simply demonstrate return to compliant levels.

Overall, it was concluded that the dust BAT-AEL was appropriate for the sector in general and that the data collected during the EU BREF data collection and review demonstrated that the BAT-AEL was set at a reasonable value.

### BAT 37: Emissions to air of NO<sub>x</sub> from heating

The TWG considered whether the BAT-AEL for NO<sub>x</sub> emissions to air should be linked to the air pre-heating temperature for existing plant. It was recognised that pre-heating air before combustion can cause NO<sub>x</sub> emissions to increase. Some designs of burners and furnaces can mitigate this potential NO<sub>x</sub> increase by incorporating systems such as flameless combustion, staged combustion, or other methods of NO<sub>x</sub> minimisation and/or abatement. However, some types of burners such as older first-generation regenerative burners do not include these types of systems and were designed primarily to improve fuel efficiency. For these types of systems, when the pre-heating temperature increases it can have a significant effect on increasing NO<sub>x</sub> emissions.

Switching off the preheat systems of these types of burners might allow the NO<sub>x</sub> AEL to be complied with but this would increase the amount of fuel needed and have a significant detrimental effect on energy efficiency and an increase in carbon dioxide emissions. Some changes to the text of technique f were made as a result of these discussions to recognise the limitations of some types of existing burners. In such cases, the best overall environmental benefits should

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

be considered by regulators on a case-by-case basis for these types of existing designs. However, it was decided that the AELs for NO<sub>x</sub> emissions should not be changed.

It was noted that this had been discussed during the development of the EU BREF and BATC and that several proposals had been put forward during this process. Data collected during the BREF review did include air-preheat temperatures and for the sector as a whole the BAT-AELs were set at reasonable and justifiable levels. A number of split views had been recorded during the European review process but that these had not proposed NO<sub>x</sub> emission levels as high as was considered by some members of the UK TWG. It was not possible to identify an alternative BAT-AEL range from UK industry data and so there was insufficient justification to increase the BAT-AEL to the levels discussed.

A detailed proposal for linking NO<sub>x</sub> AELs to pre-heating temperatures was also discussed. This proposal sought to take into account savings in CO<sub>2</sub> emissions and fuel efficiency when compared to higher NO<sub>x</sub> emissions at different pre-heat temperatures. It was concluded that this method of setting BAT-AELs was not appropriate as the proposed methodology was not able to consider fully the competing effects of pre-heat temperature on local air pollution and climate change. This methodology may be appropriate to the derogation process, during implementation of the BATC.

It was considered that the amendments to the applicability of technique f would be helpful to operators and regulators to determine whether the non-economic qualifying criteria for a derogation application could be met. These should be agreed locally between the regulator and operator.

### **BAT 39: Emissions to air from pickling**

The footnote to this BATC was amended following discussion on the use of HF/H<sub>2</sub>SO<sub>4</sub> mixed acid for pickling. It was highlighted that there is only one plant using this type of mixed acid in the UK and the process generates more HF emissions than the other mixed acid types shown in the BREF which were mainly HF/HNO<sub>3</sub> acid mixtures with different acid pickling processes. The HF/H<sub>2</sub>SO<sub>4</sub> pickling process discussed included turbulent pickling conditions of high surface area materials (wires) which inherently gave rise to higher HF emissions than other types of pickling process. Reviewing the data available for this process it was agreed that 1.5 mg/m<sup>3</sup> was a more suitable limit than 1mg/m<sup>3</sup> in this case.

The footnote was therefore amended to state that for existing plant HF emissions from HF/H<sub>2</sub>SO<sub>4</sub> mixed acid pickling can be up to 1.5 mg/m<sup>3</sup>.

### **BAT 42: Emissions to air from oiling**

A technique was put forward called 'Microcoat' which is an oiling system used at one UK site which applies a fine mist of oil using compressed air inside an enclosure. The system has an equivalent application rate of oil as electrostatic

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

oiling methods and has an enclosure to limit air emissions and catch tray to prevent liquid spills. This was a bespoke system applied at one UK site and did not necessarily represent BAT for the sector. However, it was recognised that this system was an equivalent technique to those listed as BAT and is a good example of using an alternative system to ensure an equivalent level of environmental protection as described in the section on General Considerations in the UK BAT conclusions.

## BAT 54: Emissions to water

### Indirect discharges

Several comments were received relating to the monitoring requirements and emission levels for indirect discharges to water. These might also be controlled by the receiving water company through a trade effluent discharge consent. These issues are already covered to some degree by the cross-cutting guidance as described below.

The current cross cutting guidance includes details of the IED requirements on setting BAT-AELs for indirect emissions to water i.e. sewer. The relevant BAT within the UK BAT document has applicability statements that are consistent with Article 15(1) of IED. These state that where there are BAT-AELs for indirect emissions, ELVs will be set within the BAT-AEL ranges, unless there is an applicability statement, and the Competent Authority has accepted the arguments put forward by the operator demonstrating that the applicability statement applies. In such cases the Competent Authority may decide not to set an ELV or to set an ELV that is higher than the BAT-AEL because it takes into account any further treatment that may be provided by the wastewater treatment plant. In these circumstances, the operator does not require a derogation under Article 15(4) of IED.

The relevant BAT-AELs within the BATC have applicability statements that are consistent with Article 15(1) of IED.

### BAT-AEL for Nickel

The TWG discussed footnote (4) in the BAT-AEL table, noting it only applied only related to Austenitic Stainless Steel. This is defined in the FMP BREF as stainless steel with a Nickel content of between 8-10%. The TWG agreed that steel types which had Nickel content of above 10% should be included in footnote (4). The footnote was amended to include high alloy steels with a Nickel content of greater than 10%.

This draft document should not be used for reference until the final version is published (expected at the end of 2025).

## Consensus agreement to the BATC

At the conclusion of the TWG, after a final review of the BATC text no alternate positions were submitted by TWG members and the BATC were agreed by consensus supported by this supplementary information and interpretation guidance.

## Public consultation

***This is a place holder.***

[A summary of any responses and the subsequent outcomes will be made here. This will support operators and regulators when implementing the final BATC and in the work of any future TWG]

## Formal adoption

***This is a place holder.***

[A statement will be made here in line with the final adoption and publication of the SI for these BATC.]