Incinerator Bottom Ash (IBA) and Incinerator Bottom Ash Aggregate (IBAA) FAQ

The Environment Agency has produced this Frequently Asked Questions (FAQ) document to support enquiries it receives and help deliver a consistent regulatory approach.

What is IBA?

Incinerator Bottom Ash (IBA) is a relatively coarse ash produced from the incineration of municipal solid waste. Depending on the feedstock and the types of waste burnt it contains varying quantities of glass, ceramics, bricks, concrete and metals as well as clinker and ash.

The purpose of IBA treatment is to recover the ferrous and non-ferrous metals for recycling and to produce aggregate substitutes, used in for example road construction and referred to as incinerator bottom ash aggregate (IBAA).

What is IBAA?

Incinerator Bottom Ash Aggregate (IBAA) is a waste product derived from incinerator bottom ash (IBA) after the ferrous metals, non-ferrous metals and other wastes have been screened out or otherwise removed.

Is IBAA waste?

We believe that IBA and IBAA are wastes. We believe that the use of IBAA in construction is **a deposit of waste for recovery** and **a groundwater activity** which should be carried out under an environmental permit, but for which we are taking a regulatory position (i.e. currently Regulatory Position Statement (RPS) 247).

As it states, the RPS means that we will not normally take enforcement action for failing to hold the necessary permit provided:

- the activity meets the description set out in the RPS;
- the conditions set out in the RPS are complied with;
- the activity does not, and is not likely to, cause environmental pollution or harm human health.

As IBA and IBAA are waste, the waste producer and waste holder have a legal duty of care to control the waste and manage it in a way that does not cause pollution or harm. Failure to comply with the duty of care is an offence with no upper limit on the courts' power to fine. For more information please refer to Section 34 of the Environmental Protection Act 1990 and the associated waste duty of care statutory code of practice.

Waste can cease to be a waste in certain circumstances. There is Government and Environment Agency guidance about this, and we provide a Definition of Waste Service that can provide opinions. However, to date (December 2023) no end of waste case has been agreed for IBAA waste.

How do we regulate IBAA and its use?

We regulate incinerators and the resultant incinerator bottom ash (IBA) and incinerator bottom ash aggregate (IBAA) under The Environmental Permitting (England and Wales) Regulations 2016 and certain other waste and water legislation. In general, we permit and regulate the incinerators, the treatment of IBA to produce IBAA and the disposal or recovery of IBAA.

We issued Regulatory Position Statement 247 which allows for the limited use of IBAA in certain construction activities if specified conditions are met. These conditions and restrictions help ensure that the use of IBAA does not cause pollution or harm. But those conditions aside, the RPS is clear that the waste holder or user remains responsible for ensuring that IBAA does not endanger human health or the environment.

In other circumstances the use of IBAA waste would need to be permitted on a case by case basis, covering the waste and groundwater activities taking place. Where we permit the treatment or use of IBA or IBAA the risk of pollution or harm is assessed during the application process and mitigation required by permit conditions.

We also regulate companies who transport waste and require them to be registered. Information about the registration of waste carriers, brokers and dealers is available online.

Does IBA and IBAA waste need to be assessed and classified?

IBA can contain varying quantities of residual substances which can elevate the pH and heavy metal concentrations.

Therefore, like any waste, IBA and IBAA must also be assessed and classified in accordance with our Technical Guidance WM3: Waste Classification - Guidance on the classification and assessment of waste (WM3). IBA must be shown to be non-hazardous before it can be processed into IBAA.

Industry testing of IBA since 2011 has shown a negligible number of hazardous results. However, a batch of IBA can be classified as either hazardous, or non-hazardous waste. This cannot be known until the IBA has been tested and characterised.

Incinerator operators are legally required to assess their IBA and assign the appropriate hazardous or non-hazardous waste code. This can be done by using the IBA characterisation protocol, published on the Environmental Services Association (ESA) website of by following the waste classification requirements set out in WM3.

Why do we have this RPS?

A Waste Quality Protocols project considered whether a generic end of waste position could be developed for the use of unbound IBAA. The work concluded that a quality protocol, setting out the standards by which IBAA could be recovered and used as a quality product so that it would no longer be classed as waste, could not be produced. Research undertaken as part of this project indicated that in certain circumstances IBAA use could present a risk to the environment. This environmental risk meant that additional controls and restrictions on these uses were considered necessary.

Following the end of the Quality Protocol initiative we moved to establish a new regulatory approach to address environmental concerns and allow time for further evidence to be gathered about the characteristics and classification of IBAA.

In 2017 RPS 206 was published for “Using unbound municipal IBAA in construction activities”. The reasons for having an RPS changed over time and so in 2020/21 a similar, but new RPS was issued – RPS 247. The RPS is a temporary measure put in place while other regulatory approaches are explored, potentially including changes to legislation.

What does RPS 247 cover?

For IBAA waste used under RPS 247, the position specifies restrictions, including:

- the quantities of IBAA that can be used
- the environmental settings that it can be used in, and
- the type of construction it can be used in

These restrictions are in place to prevent the risk of pollution, including from contaminants leaching. The RPS also states that activities must not endanger human health or the environment, or cause a risk to water, air, soil, plants or animals. Enforcement action could be considered if this was not complied with.

Users of IBAA waste also have a more general responsibility not to cause pollution of the environment and we could consider enforcement action under a range of legislation if they failed to meet this.

The conditions and restrictions in the RPS developed from work initially undertaken when the possibility of agreeing a quality protocol (QP) was being explored. After the QP process ended further analyses, modelling and risk assessments were carried out by the IBAA producers and the Environment Agency. This resulted in RPS 206 being issued in 2017 with a range of conditions and restrictions. Further analysis and risk assessment work since then has led to refinement of the RPS, and most recently the version of RPS 247 last updated in January 2023.

Construction uses included in the RPS

The RPS only applies to the 3 construction scenarios specified i.e. construction platform, road sub-base and pipe bedding, and the storage of waste associated with these uses. The RPS provides descriptions for these terms and additional detail is provided below. In developing the RPS other construction uses were considered but we did not agree to include them in the RPS. If IBAA waste is used in any other construction scenario then this should be done under the appropriate environmental permits.

The construction platform scenario is based on there being an average of 1 metre thickness of IBAA material. There might be other (non-waste) layers present but the RPS is only concerned with the IBAA waste layer and the modelling for that scenario assumes a 1m thickness of IBAA. There is also an assumption that the majority will eventually be covered by concrete or asphalt (e.g. car park) or a building so there is very low infiltration through the emplaced IBAA.

A road is assumed to be an elongated structure with a limited thickness and width of IBAA in the sub-base layers under an asphalt or concrete cover (or equivalent).

The pipe bedding scenario relates to the formation layer for utility pipes in a thin, narrow, elongated structure which may not have a cover which would limit rainwater infiltration. The pipe bedding scenario does not consider use of IBAA as a drainage medium or as the overlying selected fill.

It is recognised that there will be some variation from these designs.

Why does the RPS require there to be a low permeability surface?

The construction scenarios covered by the RPS have been subject to detailed and conservative risk assessment. The main construction scenarios rely on the majority of the surface of the area where IBAA is deposited being under a robust, low permeability surface like concrete or asphalt, or under a non-residential building. This is so that infiltration of water through the emplaced IBAA is minimised and hence risks to controlled waters are acceptable (if all other conditions and constraints are met).

Not only must the surface permeability be low, but it must be sufficiently durable in the long term so that it remains intact and of continued low permeability over the lifetime of the structure. For the road and construction platform scenarios there is also an assumption that it will be a drained surface, so water will not accumulate and slowly infiltrate. Concrete and asphalt are listed as examples of surfaces that can achieve all of this but the RPS does give IBAA suppliers or users an opportunity to demonstrate that some other low permeability surface design could perform similarly.

Permeable pavements, roads, car parks or driveways that encourage infiltration are not low permeability features for which IBAA can safely be used as a sub-base under this RPS.

Can IBAA be used in ways not covered by the RPS?

If a prospective user of IBAA wants to do something that falls outside of the scenarios defined in the IBAA RPS 247 they should apply for and hold an environmental permit for their proposed use.

They may also wish to seek advice from local waste regulation officers or our national permitting service. In some cases they might want to consider making a submission to our Definition of Waste Service.

Do I still need to meet other requirements?

The RPS relates to the deposit of waste and a groundwater activity being carried out in certain circumstances without the legally required permit. The existence of the RPS does not mean that other legislative requirements should not be met, or that other relevant authorities can't impose other restrictions or request relevant information. The RPS also states:

> "This RPS does not apply to any other activity, even if it is under the same legislation. You may still need other permits or licences for other activities you carry out".

A supplier or user of IBAA will need to ensure that they're compliant with a whole range of other requirements from various authorities, potentially including matters relating to planning permission, development control, health and safety and construction legislation.

Can you mix IBAA with other materials?

Mixing IBAA waste with non-waste virgin aggregate makes the whole mixture waste and subject to regulatory control. However, such waste can still be used under the terms of RPS247 providing that the tonnage and other limits and restriction are complied with for the mixture as whole.

If IBAA waste is mixed with other waste materials the resultant mixture is still waste but it cannot be used under the terms of RPS 247. This is because the characteristics of the new waste are likely to have deviated from the assumptions about IBAA that underpin the RPS.

If IBAA waste is mixed with waste-derived material that has achieved end of waste status then the whole mass will now be waste.

How is IBA and IBAA tested?

IBA should be being tested on an rolling basis in accordance with the Environmental Services Association (ESA) testing protocols. The ESA developed the IBA Sampling and Testing Protocols and associated guidance to encourage a consistent approach to classifying IBA that reflects good practice. The ESA worked closely with us to create the protocols.

We have been working with the IBAA industry for several years as they've undertaken rigorous and lengthy sampling and testing of IBAA from their various production sites. For some substances they have undertaken detailed chemical speciation and we agreed to the methodology used to do this. From this, 'refinement factors' have been derived for certain producers or manufacturing sites that can be used in waste classification.

We are currently working with the industry to develop and agree a sampling/testing protocol for IBAA. As with the ESA IBA testing protocol, this will cover the frequency of sampling and testing and the actions that should be taken if certain thresholds are exceeded. Once agreed the IBAA testing protocol should cover how IBAA refinement factors (if available for a particular company or plant) can be used in the classification of IBAA. We are aiming to require all IBAA manufacturers to adopt the testing protocol.

What happens if I dig up something constructed using IBAA?

When any land is dug into or excavated the person doing so has to consider various regulatory requirements. For workers and their employers this will include health and safety matters which are regulated by the Health and Safety Executive.

Material which is dug up can be waste, or become waste if it is discarded. Operators have a legal duty to assess that waste in accordance with WM3, a legal duty of care and a responsibility to ensure they have the correct permissions or permits in place before waste can be moved.

Excavated material from a former construction platform or road is likely to include various materials and/or wastes, rather than be predominantly IBAA. This material could have been subject to a range of natural and anthropogenic processes that will have changed its characteristics over the time it has been in the ground.

IBA, IBAA and excavated construction / demolition material containing IBAA are different waste materials. They are likely to be coded differently and their physical and chemical properties are likely to be significantly different.