

Ash – a valuable Material for several Purposes

*REACH Registration
and Utilization of Ash*



Granulated ash

Mixed Ashes Consortium
Key information on ash REACH registration

A REACH registered product

Ash is in the scope of the European chemicals regulation, REACH, if it does not have waste status. In November 2010 a group of 71 companies Europe-wide made a joint registration of ash to the European Chemicals Agency (ECHA) as “the product from the burning of a combination of carbonaceous materials”.

The registration covers ash originating from combustion of mixed fuels, like wood, peat and recovered fuel. Ash was registered as an UVCB¹ substance which means that the main issues for substance identification are fuel composition and combustion technology, like fluidized bed boiler and grate firing boiler.

Key information on ash REACH registration	
Name of the REACH Consortium	Mixed Ashes Consortium
Contact	Ash.consortium@linnunmaa.fi
Substance name	The product from the burning of a combination of carbonaceous materials
Description of the substance	The product from the burning of a combination of carbonaceous materials. The following elements may be present as oxides: aluminium, calcium, iron, magnesium, potassium, and silicon.
EC Number	931-597-4
Main constituents	Calcium, silicon, aluminium, iron, magnesium, potassium, sodium, phosphorus

¹ Substances of Unknown or Variable composition, Complex reaction products or Biological materials

Ash is a useful multi-purpose product

The main benefit of the ash is its high content of various useful minerals for different uses. Due to its properties, ash is a good fertilizer, stabilisator and filler material. The end uses of ash covered in the registration are:

- Use in ash containing construction materials and castings (industrial and professional)
- Use in hot aggregates (professional)
- Use as fertilizer (professional)
- Use in soil construction (industrial and professional)
- Stabilisation (industrial and professional)
- Use in flue gas treatment (industrial)
- Use in paper production (industrial)
- Use in secondary steel process

Extensive laboratory analyses assigned

According to the REACH requirements a lot of laboratory tests concerning the physico-chemical, toxicological and environmental fate properties of the ash were conducted by European laboratories on the assignment of the Mixed Ashes Consortium. The registration dossier includes information about the ash composition, physico-chemical properties, toxicological and ecotoxicological properties and the risk assessment of ash in several uses.

Composition and properties of ash vary depending on the fuel type and the combustion technology. The registration was based on laboratory analyses of several different ash samples and variations were considered in the risk assessment. The risk assessment based on the study results pointed out that the key hazardous components of ash are alkaline compounds and heavy metals. The health risks are mainly related to alkalinity. Mixed ash is not classified as hazardous to the environment.

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Safe use of ash

The use of ash is safe when the appropriate risk management measures are followed. When handling ash, it is important to use a recommended personal protective equipment to avoid hazard caused by the alkalinity. If the ash is dusty, inhaling dust should be avoided and respiratory protection is needed. Alkalinity and dustiness are the main hazards of the ash for workers. If personal protective equipment is not used ash may irritate skin and respiratory tract and cause serious damage to eyes. Heavy metals in ash could be absorbed into human body via lungs or stomach.

Ash is not classified as hazardous to the environment. However, ash may contain compounds (e.g. aluminium, arsenic or heavy metals), which are toxic to aquatic and terrestrial organisms. If these compounds are present in high concentrations ash may not be utilizable for purposes where the extent of contamination cannot be controlled (e.g. as a fertilizer). In general, releasing of large amounts of ash to the environment, waterways or sewers must be avoided.

Safety data sheet and exposure scenario

When registering the ash, the companies have got a registration number which they add in the chemical safety data sheet of the ash. The safety data sheet will also include the exposure scenarios for the identified uses of the chemical. The users of the ash should check that their use is covered by the exposure scenarios presented. If downstream user cannot find their use, they can ask the ash supplier to update the registration. If the requested use cannot be added to the exposure scenarios, downstream user has to prepare their own chemical safety report in order to be allowed to continue that specific use.

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Classification

As a part of the REACH registration the registrants have prepared a harmonised classification for the ash. Classification is based on the laboratory analyses and risk assessments done in the registration process. Ash is classified as corrosive mainly due to the high content of calcium oxide which, however, in many uses is also the most beneficial property of the ash. During the aging process calcium oxide content of ash decreases which, while decreasing the corrosivity, also transforms some of the ash properties to even more valuable. Ash is not classified as dangerous goods for transportation.

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Classification according to CLP Regulation (1272/2008)				
Pictogram	Signal word	Hazard statements	Precautionary statements	Classification
GHS05 	Danger	H315 Causes skin irritation H318 Causes serious eye damage H335 May cause respiratory irritation	P280: Wear protective gloves/protective clothing/eye protection/face protection. P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P261: Avoid breathing dust/fume/gas/mist/vapours/spray	Skin Irrit. 2, H315 Eye Damage 1, H318 STOT Single Exp.3, H335
Classification according to Directives 67/548/EEC-1999/45/EC				
Pictogram	Signal word	Risk statements	Safety statements	Classification
Xi irritant 	-	R37/38 - irritating to respiratory system and skin R41 - risk of serious damage to eyes	S26 - in case of contact with eyes, rinse immediately with plenty of water and seek medical advice S37 - wear suitable gloves S22 - do not breathe dust	Xi;R41-37/38

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Other legislation concerning ash

In addition to the REACH Regulation there are several other pieces of EU legislation concerning utilization of ash. Due to differences in national legislation, the conditions may vary in different countries. REACH as such does not affect the application of for example the existing waste, construction and fertilisers legislation.

This leaflet is produced by Mixed Ashes Consortium. For more information please contact Project Manager Linnunmaa (ash.consortium@linnunmaa.fi).

Recommendations for ash users

- Ask your supplier for an updated extended Safety Data Sheet
- Check that your uses are covered
- Train your employees
- Follow the instructions of the Safety Data Sheet