

Catalytic Converters containing Refractory Ceramic Fibre (RCF)

DRAFT FOR COMMENT

Quick guide nnn_nn

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What's this document about?

This guide provides advice on the classification and coding of catalytic converters and the permitting requirements for sites producing, storing and processing waste catalytic converters.

Who does this apply to?

This guide provides regulatory officers and permitting officers with technical standards and compliance guidance relating to automotive catalytic converters.

This guidance is written for Environment Agency staff however it may be shared with external bodies and parties.

Contact for queries and feedback

- Tania Tucker
- Need to add in feedback line

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Catalytic converters - what are they and how to identify them

Automotive catalytic converters

Catalytic converters come in all shapes and sizes, depending on the make and model of vehicle they originate from. They are fitted to a vehicle exhaust system and their purpose is to reduce the amount of volatile organic compounds (VOCs), carbon monoxide and nitrogen oxides emitted in the exhaust gas of the vehicle.



Figure 1 - a mixed load of catalytic converters

The catalyst

Catalytic converters have a ceramic monolith core with a honeycomb structure. The catalyst within the honeycomb tends to be a mix of 'precious metals'. Platinum is the most widely used, along with palladium and rhodium (although other precious metals can also be used).

Recycling the catalytic converter

Catalytic converters have a ceramic monolith core with a honeycomb structure. The catalyst within the honeycomb tends to be a mix of 'precious metals'. Platinum is the most widely used, along with palladium and rhodium (although other precious metals can also be used).

INSERT a sectional diagramme of a catalytic converter.

Support mats in some catalytic converters

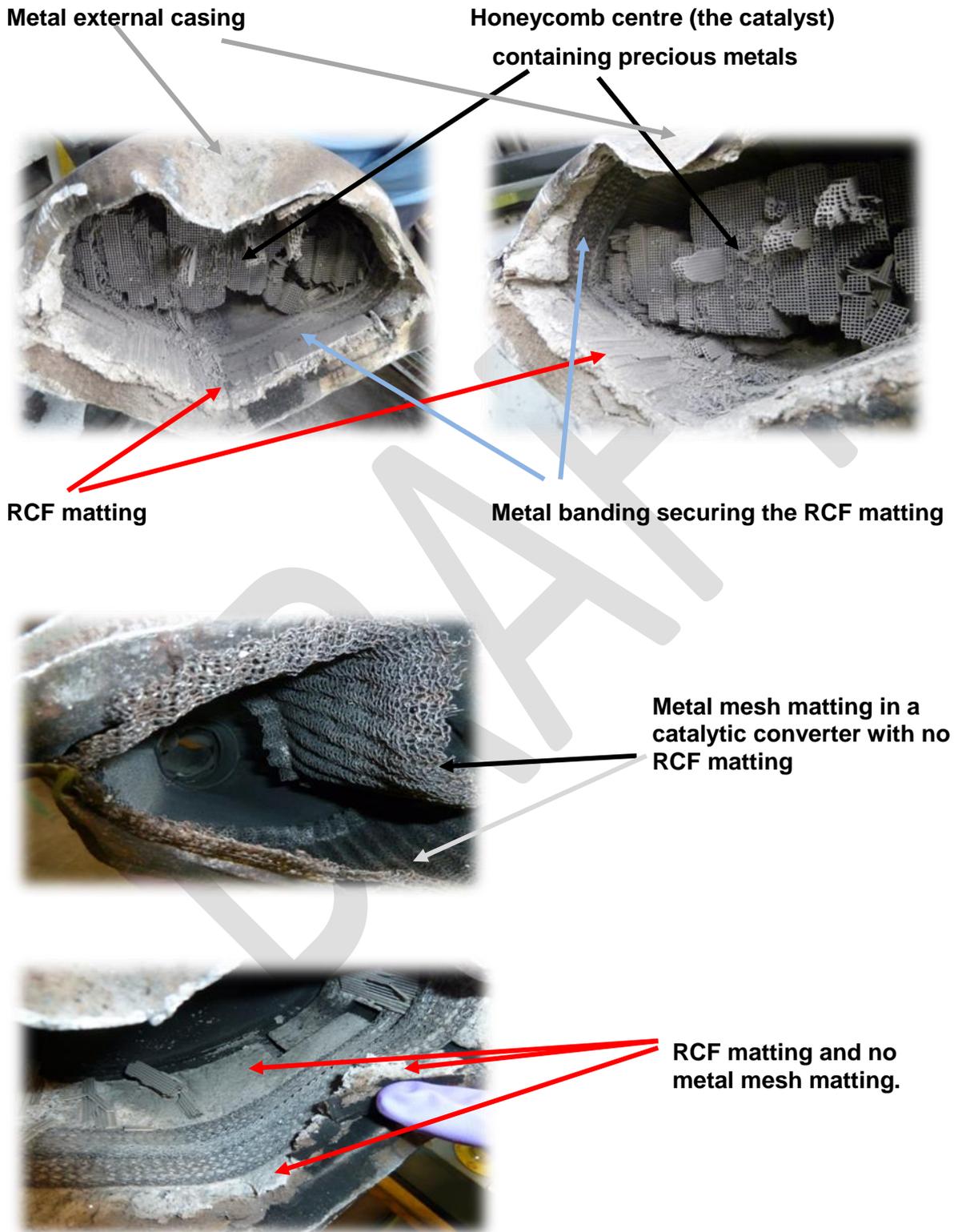
Support matting

In some catalytic converters and diesel particulate filters there is a support mat made from refractory ceramic fibre (RCF). This matting is used to protect the honeycomb centre and also as insulation to maintain the high temperatures needed for the reactions that take place in the honeycomb centre.

RCF

RCF is classified as a Category 1B carcinogen and has properties very similar to asbestos, therefore catalytic converters containing RCF matting must be classed as hazardous waste.

The internal structure of a catalytic converter



Classification of catalytic converters

Whole catalytic converter units

- Catalytic converters with RCF matting should be classified as hazardous waste. *List of Waste code 16 01 21* Hazardous vehicle components - catalytic converter containing RCF mat.*
- Where a catalytic converter is removed from a vehicle and it is not possible to determine whether it has RCF matting it must be classed as 16 01 21*.
- Catalytic converters that do not have an RCF mat within them should be coded 16 01 22 – *catalytic converter not containing RCF matting.*

The monolithic honeycomb block

This contains the catalyst and once removed from the metal casing this should be coded.

- *Spent catalysts containing gold, silver, rhenium, rhodium, palladium, iridium or platinum except 16 08 07*.*

Metal casing

- Metal catalytic converter casing that does not contain RCF matting should be coded 16 01 17 - *Ferrous metal.*
- Metal catalytic converter casing containing the RCF matting – should be coded 16 01 21* - *Metal catalytic converter casing containing RCF.*

RCF

- RCF matting removed from the metal casing – should be coded 16 01 21* - *RCF matting from catalytic converters.*

Storing and bulking up catalytic converters

Storage and safe handling at producer sites

Waste catalytic converters are produced at vehicle repair garages and at End-of-Life Vehicle (ELV) sites.

When the catalytic converters are removed from vehicles:

- They must be stored in a manner that does not result in the metal casing being pierced or breached. E.g. stored in a rigid container
- No treatment (decanning) or further processing should be done on site unless an environmental permit is in place that specifically authorises this (see below) and the processing machinery is suitably extracted and abated.

Consignment notes

Catalytic converters containing RCF matting should be consigned from site as hazardous waste 16 01 21* and consigned to a suitably permitted site for decanning.

Where it is not possible to determine whether or not the catalytic converter unit has RCF matting within it must be classed as 16 01 21*.

Carriage of dangerous goods

The HSE have confirmed that RCF has not been classed as dangerous goods for transport. There has not been a UN number assigned to RCF so the Carriage of Dangerous Goods legislation does not apply.

Processing catalytic converters containing RCF

De-canning catalytic converters containing RCF

There are a number of systems available for de-canning catalytic converters. We will require that the catalysts are cut open, the catalyst removed under local extracted ventilation (LEV) with a HEPA filter.

<http://www.hse.gov.uk/lev/>

Some sites will also remove the RCF matting from the metal casing – this must be done under local extracted ventilation (LEV) with abatement and discharged via a HEPA filter.

Need to add in some photographs of differing types of de-canning equipment

HSE requirements

We do not regulate or advise on health and safety requirements but we do work closely with the HSE.

The advice we have received from the HSE is that where catalytic converters containing RCF are being cut open (de-canned) then it is likely that RCF fibres will be released. The Control of Substances Hazardous to Health (COSHH) Regulations will therefore apply. These Regulations are enforced by HSE. Exposure to RCF must be reduced as low as reasonably practicable (ALARP) and suggested measures to control exposure to RCFs should include:

- Local exhaust ventilation at the de-canning process
- PPE
- RPE (e.g. for cleaning and maintenance operations)
- Information, instruction and training (on the hazards/control measures of RCF)
- Hygiene procedures

If you come across a decanning process that you have concerns about it you can [report your concern to the HSE](#)

Permitting requirements for storage and processing sites

Storage sites.

Storage of catalytic converters removed from vehicle at the place of production:

- Non-waste framework directive exemption for both catalytic converters with or without RCF if at a garage or vehicle repair shop.

Storing catalytic converters at ELV sites or at intermediate sites (a place other than where the catalytic converters were removed from the vehicle):

- Storage of <50 tonnes of hazardous waste including catalytic converters with or without containing RCF matting (waste operation)

- Storing >50 tonnes of hazardous waste including catalytic converters **containing RCF** matting at. (Installation - Schedule 1, Section 5.6 A(1)(a))
-

Processing sites.

The guillotining and decanning of the honeycomb centre of the catalytic converter is a physico-chemical treatment.

- Processing > 10 tonnes per day of hazardous waste including catalytic converters containing RCF matting. (Installation -Schedule 1, Section 5.3A(1)(a)(ii)).
 - Processing < 10 tonnes per day of hazardous waste including catalytic converters containing RCF matting. (Waste operation)
 - Processing catalytic converters not containing RCF (bespoke Waste operation).
-

Disposing of RCF matting and metal casing contaminated with RCF

RCF matting only.

- RCF matting removed from catalytic converters must be double bagged in 1000 gauge polyethylene lined sealable bags or wrapped in plastic and sealed.
- The bags/sealed plastic must be stored in a secure place or lockable rigid container which is suitably labelled to identify that it contains RCF.
- The bags of RCF **must not be re-opened or compacted** and must be handled to ensure their integrity is maintained.
- The bagged RCF is hazardous waste and must be consigned to a suitably permitted facility (eg. landfill for disposal) and coded as 16 01 21* Bagged RCF matting from catalytic converters.

Metal casing not containing RCF

Metal casing that does not contain RCF or has had the RCF mat fully removed can be sent for shredding and recovery at a suitably permitted metal recycling site.

Metal casing containing RCF

Metal casing which has RCF matting remaining within it must be classed as hazardous waste and consigned from the site for disposal. The metal casings must be either:

- double bagged in polyethylene lined sealable bags or
- wrapped in plastic and then stored in a lockable rigid container.

This waste must be sent to a suitably permitted landfill for disposal and coded as 16 01 21*

Related documents

Links

Reference documents
Consignment procedure etc

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