

EUROPEAN CRACKING CATALYSTS PRODUCERS ASSOCIATION (ECCPA)

FCC Equilibrium Catalyst (including FCC catalyst fines) finds safe reuse/rework outlets in Europe

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1.0: Introduction

Under the auspices of the European Chemical Industry Council, or Cefic, a taskforce of European Cracking Catalyst Producers was established.

It provides a forum for debating questions, problems, facts and topics arising during the generation, storage, transport, use and reworking of FCC–Equilibrium catalysts, as well as any other subject related to the interests of EH&S-tasks.

It ensures that its views are made known to the oil refining industry, to other technical groups and organisations, official bodies, and national and international authorities.

The primary objective of the taskforce is to study and promote viable and environmentally safe handling storage, transport, rework or reuse options for equilibrium FCC catalyst and FCC catalyst fines.

At present, approx. 500 thousand metric tons of FCC catalysts are used worldwide, of which 20% in refineries with FCC units (FCCUs) in Europe.

Approx 75 thousand tons of used catalyst is generated from European FCC's in two types:

- Catalyst fines
- Equilibrium FCC catalyst

The proximity of the equilibrium catalyst source to the point-of-reuse/rework is critical, because this determines the transportation costs – the major element in the cost of reuse/rework. This is why a balanced geographical spread of reuse outlets throughout Europe is sought.

Usages in the area of construction materials and steel mills offer potential outlets for the reuse of equilibrium fluid catalytic cracking (FCC) catalyst that far exceeds the supply from European refineries.

Of the 75 thousand tons of fresh FCC catalyst purchased annually by European refiners, only a relative small portion is either reused in-house or sold to other refineries as catalyst (E-cat). Ultimately, a high volume needs to be reworked in a safe and environmentally acceptable way. Equilibrium FCC catalyst, not suited for further refinery use, is a silica/alumina zeolite-containing material with contaminations of heavy metals like nickel and vanadium. This material has to be treated as waste.

The following information is provided for a better understanding of the current status:

- EU Legislation
- Examples of reworking routes



2.0: EU legislation

With tightening legislation, land filling, with possible associated liabilities, is not—allowed anymore.

The EU directive on land filling overrules the less stringent national legislations, thus constituting the minimum requirement in all EU member states.

For the purpose of land filling, (hazardous-)waste acceptance criteria and procedures will apply.

Treatment or rework of equilibrium catalysts may involve a transboundary (international) movement, and in this context it is important to be aware of any further regulations covering the movement of such materials between countries.

The Basel Convention of 22 March 1989 describes procedures that must be followed in making transboundary movements of hazardous waste and their disposal. The Basel Convention applies in several countries in- and outside Europe.

Movement between countries where only one country has ratified the Basel Convention is prohibited without the existence of special bilateral or multilateral agreements.

Detailed information can be found at the following Internet address:

<http://www.basel.int> (Secretariat of the Basel Convention) (Status Jan. 2006)

The Organisation for Economic Co-operation and Development (OECD) decision of 30 March 1992, No. C(92)39 final, replaced by C(2001)107/final on 21 May 2002 and amended by C(2004)20 on 09 March 2004, which is in accordance with the provisions of the Basel Convention, applies to transboundary movements of waste within the OECD area. It covers both hazardous and non-hazardous wastes, but only when they are destined for recovery operations.

Detailed information can be found at the following Internet address:

<http://www.oecd.org> Select in “Browse”: topic. Under “Topics” select: Environment and then under its topic “Waste”: “Transboundary Movement of Waste” can be found. (Status Jan. 2006)

The OECD categorises waste in three different lists: green, amber and red.

- The green list covers non-hazardous wastes, which will be subject only to the controls normally applied in commercial transactions.
- The amber list covers wastes, which exhibit hazardous characteristics or contain hazardous components, and for which prior notification of the proposed movement is required to authorities in all concerned countries (those of export, transit and import). A tracking document is required for the movements of the waste. The transport can take place as soon as express authorisation is given or an objection period has passed after receipt of the notification by the authorities concerned unless objections have been raised (tacit consent).
- The red list covers hazardous wastes, which require the same notification as for the amber list, but for which written consent must be obtained from all concerned authorities before the transport can take place.

The international transport of waste relating to countries within the EU is, with effect from 6 May 1994, covered by the Council Regulation (EEC) No. 259/93 of 1 February 1993, replaced on 10 June 1998 by the Commission decision 98/368/EC, on the supervision and control of shipments of waste within, into and out of the European Community. The EU regulation implements the



above-mentioned international agreements in Commission regulation (EC) No 2557/2001 to reflect OECD guidelines C(2001)107/final.

Detailed information can be found at the following Internet addresses:

(Status Jan. 2006) http://europa.eu.int/index_en.html.

Select under activities: "Environment".

Select "waste" under the heading "A comprehensive guide to European Law". Under hazardous waste chapter all relevant information can be found with links to official texts.

Or: <http://europa.eu/int/eur-lex/lex/en/repert/index.html>

Select: Environment, consumers and health protection

Select: Waste management and clean technology

or go directly to the address:

http://europa.eu.int/eur-lex/en/lif/reg/en_register_15103030.html

Equilibrium catalyst is listed on the OECD green list (code GC050). However, a green listed equilibrium catalyst must be treated as amber or red list if contaminated with 0.1% of other materials, according to EU Regulations, which increase the risks sufficiently to meet the criteria for the amber or red list, or which prevent recovery in an environmentally sound manner. Also the possibility exists for OECD member countries to classify wastes differently than the OECD lists if required by their national legislation or according to their national testing procedures. Important annexes (lists) to the EU Regulations are regularly revised by the EC Commission.

In the event of doubt on the correct categorisation or classification, it is recommended that the local regulatory authorities are consulted with respect to their requirements or contact your local fresh catalyst sales representative for support.

3.0: Examples for routes of reworking

The area of construction work – a traditional outlet for industrial residues – has been investigated as an outlet for the rework of equilibrium catalyst.

Potential reuses identified include:

- Constructional work
- Cement
- Insulation material
- Metal casting industry

4.0: Taskforce members

4.1 Albemarle Catalysts Company B.V.

4.2 BASF AG

4.3 GRACE Davison Refining Catalyst Europe

5.0: Disclaimer

"This document is intended for information only and sets out advice for the safe reuse/rework and outlets of FCC equilibrium catalyst. The information contained in this article is provided in good faith and, while it is accurate as far as the authors are aware, no representations or warranties are made with regards to its completeness. For guidance on individual circumstances specific advice should be sought and in all cases the applicable national, European and international regulations should always be complied with. No responsibility will be assumed by Cefic in relation to the information contained in these guidelines."

