

Hydrotechnik
 Unit 10 Easter Park
 Lenton Lane
 Nottingham
 NG7 2PX

TEST REPORT

Certificate No.	63844 Page 1 of 3
Date received	28.07.08
Ref.	Filter/63844

12th August 2008

Re. Analysis of a Spent Filter Sample for Hazardous Waste Classification

A sample of filter medium was received from Filtertechnik for chemical analysis. It is understood that the filter had been used to remove contaminants from a biodiesel production process and the requirement is to classify the material in accordance with the UK Hazardous Waste Regulations.

Waste Classification Analysis Results-Non-Metals

Determinand	Units	Spent Filter Sample
Loss on Ignition	%	89
Total Organic Carbon	%	52
Mineral Oil (TPH C ₁₀ -C ₄₀)	mg/Kg	294967
Total of 17 PAHs	mg/Kg	8.2
BTEX (Benzene, Toluene, Ethylbenzene, Xylene)	mg/Kg	0.02
PCBs	mg/Kg	<0.1
pH	-	6.4

Waste Classification Analysis Results-Metals

Determinand	Units	Spent Filter Sample
Antimony	mg/Kg	<1
Arsenic	mg/Kg	<1
Barium	mg/Kg	3
Beryllium	mg/Kg	<1
Cadmium	mg/Kg	<0.2
Chromium	mg/Kg	<1
Cobalt	mg/Kg	<1
Copper	mg/Kg	2
Lead	mg/Kg	2
Manganese	mg/Kg	10
Mercury	mg/Kg	1.2
Nickel	mg/Kg	2
Selenium	mg/Kg	0.8
Thallium	mg/Kg	<1
Tin	mg/Kg	3
Vanadium	mg/Kg	3
Zinc	mg/Kg	15

The sample was analysed to classify the material as hazardous or non-hazardous waste. European Legislation EH14473/02 specifies the criteria and procedures for acceptance of waste at landfills pursuant to Article 16 and Annex 11 of Directive 1999/31/EC (Landfill directive). These regulations set out requirements for 3 levels of testing with various responsibilities. Basic characterization is the first step in the acceptance procedure and is one of a number of criteria to be examined. The legislation provides definitions for 3 categories of waste materials- Inert waste, Non-hazardous waste and hazardous waste. Each category has leaching limit value criteria for acceptance of materials at a landfill site. The criteria specified are set out below-

Analyte	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
As	0.5	2	25
Ba	20	100	300
Cd	0.04	1.0	5.0
Cr	0.5	10	70
Cu	2	50	100
Hg	0.01	0.2	2.0
Mo	0.5	10	30
Ni	0.4	10	40
Pb	0.5	10	50
Sb	0.06	0.7	5
Se	0.1	0.5	7
Zn	4	50	200
Cl	800	15000	25000
F	10	150	500
SO4	1000	20000	50000
TDS	4000	60000	100000
Phenol Index	1		
DOS	500	800	1000

Additional Parameters for waste acceptance at landfill-

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in non-hazardous landfill	Hazardous waste landfill
TOC (%w/w)	3	5	6
LOI (alternative to TOC)			10
BTEX (mg/Kg)	6		
PCBs (mg/Kg)	1		
Mineral oil (mg/Kg)	500		
PAHs	To be set		
pH	>6		
Acid neutralization capacity		To be evaluated	To be evaluated

In addition to the above there are further requirements for classification as laid out in the Waste Acceptance Criteria/WM2 for Hazardous landfills.

Results Summary and Discussion-

The results above can be summarized as follows-

The results for metals on the “as-received” sample were very low and on this basis would mean the material being classed as inert waste.

A sample of filter medium was received from Filtertechnik for chemical analysis. It is understood that the filter had been used to remove contaminants from a biodiesel production process and the requirement is to classify the material in accordance with the UK Hazardous Waste Regulations. The sample was further analysed by solvent extraction

followed by gas chromatography-mass spectrometry and the resultant chromatogram was compared with a standard prepared from a vegetable oil.

In addition a calorific value analysis was performed on the filter. The results are as follows-

Determinand Units Spent

Filter

Sample

Gross Calorific Value MJ/Kg 19399

Vegetable Oil (Fatty acid) content % w/w 28.4

The results above show that the “mineral oil” content previously identified by the generic test is, in fact entirely composed of a vegetable oil and therefore on this basis would the filter material would not be classed as hazardous.

.....

.....
J.Fursman

For/on behalf of Marchwood Scientific Services Ltd