AFNOR CERTIFICATION

FEASABILITY STUDY ON AN EUROPEAN ECOLABEL ∋SCHEME FOR VACUUM CLEANERS

FINAL DRAFT

Patricia PROIA, AFNOR CERTIFICATION, French Competent Body

Final Draft

CONTENTS

1 INTRODUCTION

The European Ecolabel ə has been set up to encourage manufacturers to produce products more friendly for the Environment with a same fitness for use and to help consumers in their shopping through a better information printed on the packaging. Criteria are established following life cycle considerations at every step of the product's life cycle. They arise from discussion with the different stakeholders such industry representatives, environment and consumers organisation, retailors and others. Criteria on performance shall never be forgotten for the credibility of the European Ecolabel.
The consumers will choose an environmental friendly product if they have no risk to be desappointed by its fitness for use. This European Eco-label ə is recognized by all the countries of the European Union and its application is voluntary for the companies.

Producers who want to promote their environmental friendly products have now an official marketing tool, the European Eco-label ə.

Consumers can choose and buy products with a good quality and more friendly for the Environment (10% of the totality of consumers buy vacuum cleaners each year)
Retailers can propose to their customers an alternative to the classical shopping.

Among the priorities pointed out by the new Environment Commissionner, three of them can be considered for the need of a future ecolabel for vacuum cleaners :

➔Climate change-action to combat climate changes and the consequences, Kyoto commitments, understanding with the US on further work ;
➔New chemicals policy based on the main principles of EU environmental policy including the use of the precautionary principle ;
➔Health and Safety- protection from environmental hazards but also high quality of life ;

Today, it exists an ecolabel scheme for household appliances as washing machine, dishwashing machine, refrigerators and freezers.
The extension to a new category in this sector would be of a great interest for consumers.
The Commission, through AFNOR CERTIFICATION, French competent body, is conducting a feasability study on an ecolabel for vacuum cleaners. This report will provide the Commission with an informed opinion concerning the potential for establishing an european Eco-label ə scheme on vacuum cleaners, including the potential barriers and the opportunities to develop this label.

Consultation and the collection of pieces of information has represented an important part of the work and, in the case of vacuum cleaners, it has concerned each national professional organisation.

In fact CECED, European organisation for household appliances regroup each national organisation which has data on vacuum cleaners market. We have consult producers, consumers association and environmental associations. Retailers have been also consulted. Views of interested parties have been obtained also during these different interview.

2 FRAMEWORK

2.1 POLITICAL FRAMEWORK

For the time being the European Eco-label ə applies to different categories of products in household appliances. It concerns washing machines, diswashing machines, refrigerators/freezers. The objective of the Commission is to extend the range in this sector and to consider the extension to vacuum cleaners is a good idea in particular for the retailers.

To develop environmental criteria for vacuum cleaners within the ecolabel reaches the same goals than the IPP demarch and will permit to give a better information for all new technologies taking into account environment.

The vacuum cleaners are not concerned by the energy label so there is no competition between these two labels energy and European Eco-label but it is an opportunity to begin to work , on this category, for developing an ecolabel and to anticipate a potential energy label.

The market of vacuum cleaners is an european and international market, so the European Eco-label is a good answer for producers to promote their products abroad.

2.2 REGULATION FRAMEWORK

Considering the regulation, the Commission plans to elaborate a directive on waste electrical and electronic equipment amending Directive 76/7669/EEC which takes into account products used by consumers and which risks to end their life in the municipal waste stream. In this directive there are a lot of requirements which concern the end of life and the manufacturing of the products taking into account the type of materials.

At an European level there are thinkings about the integration of environmental requirements in standards for products and the development of on an European Eco-label ə will be helpfull for these works.

The Integrated product policy is a public policy which aims at or is suitable for continuous improvement in the environmental performance of products and services within a life cycle context.
For memory, the Ernst § Young study proposed (in 1998) to build IPP around 5 parties, in particular :

- Reduction and management of waste coming from the consumption of products
- Development of products more friendly for the Environment
- The establishment of market for these products more friendly for the Environment

2.3 STANDARDIZATION FRAMEWORK

In the sector of vacuum cleaners there are a lot of standards which specify fitness for use and even can serve for the testing of some environmental criteria.

2.4 DEMOGRAPHIC FRAMEWORK

This market is a growing market, considering the needs of the Eastern countries for these products and the specificity of the American market with an important growth because in the houses many vacuum cleaners are used for different purposes.

2.5 CULTURAL FRAMEWORK

Today more and more consumers are concerned with the environment problems and they are more and more interested in products more friendly for the Environment. In the Nordic countries, they are, from a long time, sensitive to these products.In the others countries, it is not yet a priority for the moment but it is growing up.

3 MARKET ANALYSIS

3.1 THE VACUUM CLEANER MARKET

In Europe the vacuum cleaner market mainly present three types of products as the sled type vacuum cleaners, upright vacuum cleaners and hand held vacuum cleaners. There are also all the extractor and injector vacuum cleaners which have others functions than aspirate dust. These vacuum cleaners concern the consumers market. There are also professionnal vacuum cleaners as NILFISK for example which are for some of them very similar of the consumers vacuum cleaners.

In Europe the market is dominated by sled type vacuum cleaners or cylinder vacuum cleaners, 2,8 millions of products of this type have been sold in 99 in France, which represents about 80-85% of the market. Only in Great Britain the more sold vacuum cleaner is the « upright vacuum cleaner ».

In Europe the vacuum cleaner market represents about **13 millions of units** sold without taking account the cordless vacuum and injectors/extractors and about **2 milliards of euros.** The figure has to be compared with a market of 348 millions of European consumers (data 1993 from the French federation)

In Western Europe the vacuum cleaner market will continue to increase because a replacement market (life-cycle of a vacuum cleaner generally lower than of other

appliances).In UK for example, consumers will want to replace their older models with newer models, which are claimed to be more efficient and powerful.

In GERMANY the market will focus on ease of use and energy efficiency.

The market of cylinder vacuum cleaners represents in Europe about 10 millions of units.

Percentages of volume sales for cylinder vacuum cleaners

Countries	% of total sector
Sweden	93,9
France	87,8
Netherlands	80,1
Spain	72,6
Germany	66,5
Italy	50,0
UK	34,0

Source Euromonitor 1998

As we see, in UK, the % of vacuum cleaners represent only 34%. In fact in UK consumers show a real preference for upright cleaners. In Great Britain there is also a new product, a vacuum cleaner without bag with the brand DYSON. This product has taken the first place in this country but it market share is smaller in the other countries.

Others brands begin to think about new technologies such as the vacuum cleaner without bag. Then, POLTI an Italian producer offers to the market a new vacuum cleaner « The « Lecologico » without bag which filters dust in a water container. Electrolus, Hoover also begin to propose products without bag to improve the efficiency.

Big brands are thinking about vacuum cleaners very efficient for the air quality.

Others different types of vacuum cleaners : Figures for 7 countries of European Union

The **« upright vacuum cleaners** »,. In Europe about 4 millions of upright vacuum cleaners are sold. They are used mainly for carpets and they are as good as cylinder vacuum cleaners used with an electrobrush.

Countries	% of volume sales
UK	62,0
Italy	30,0
Germany	20
Netherlands	4,9
France	0,1
Spain	1,0
Sweden	-

Source Euromonitor 1998

The **« Hand held vacuum cleaners»,** about 2 millions of this type of products are sold in Europe. They are not very powerful, noisy, and are very often used as additional vacuum cleaners or by people having a small surface to clean

Countries	% of volume sales
Spain	26,5
Germany	20,3
Italy	20,0
Netherlands	15,0
France	4,7
Sweden	6,1
UK	4,0

Source Euromonitor 1998

3.2 RECENT MARKET TRENDS

In the vacuum cleaners market, product innovation, at least from a technical point of view, is limited in most areas.Consequently, product development in this sector has tended to concentrate on aesthetically innovative design concepts and improved ergonomics.Recent models have featured new rounded and smooth shapes and a range of innovative colours.

The producers begin to propose a lot of products with nice forms, Models like compacts and super compacts, nice colours and so on . It is no more a traditional market with only one form, only one type of use and so on.

Producers of residential vacuum cleaners and carpet extractors are heeding consumer demands for superior cleaning ability and convenience . They’re meeeting those demands to improve indoor air quality, reduce motor noise, and including features such as onboard, detachable tools.

To day's vacuum cleaners are quality products. For proof, consider that « good » was the worst rating Consumer Reports bestowed on a machine in its March 1998 reviews ; (« excellent » was the best rating)

So we can say that the most important developments that manufacturers have introduced until now are :

- Increased compactness with the same or increased suction
- Improved comfort/ease of use (in terms of noise nad bag changes)
- Improved air quality features (air filters)
- Improved surface features, including a greater ability to work on a variety of surfaces, including uncarpeted floors
- Improved feedback to the user, eg the introduction of « dust sensors » which activate a light when the area is clean

Models which improved functionality, such as heads which swivel 360 degrees

New technologies are proposed by some producers as DYSON and POLTI. To day it is the vacuum cleaner without bags which is innovating (energy consideration) and also the vacuum cleaner which takes into account the filtration seriously (health and air quality in consideration) with HEPA filter and a total airtightness of the vacuum cleaner.
More and more in the same time we find producers which propose products with an improved functionality, such as heads which swivel 360 degrees.

Vacuum cleaner Appliances : National Volume

Countries	National volume
Germany	5 000 000
UK	6-7 000 000
France	2 800 000
Italy	1 800 000
Netherlands	600 000
Spain	550 000
Sweden	330 000

Source Euromonitor 1998

3.3 THE VACUUM CLEANERS PRODUCERS

The vacuum cleaners market is an european market and even international. In fact we can find different brands very known like Miele, Siemens, Philips, Electrolux, BSHG and Moulinex and so on which have national market with different industrial sites in Europe and in Asiatic countries.

When we regard the different brands we see that there are some brands which are sold in the different countries of European Union and brands which are more national like for example UNIFESA for Spain, SEBO for Germany, HEMA, NILFISK, FAM and BESTRON, brands of Netherlands.

Only the leading manufacturers, such as Electrolux, BSHG, Miele have brands that are strong across a range of national market. Leading brands include Electrolux, Hoover, Bosch, Siemens and Miele.

Only one manufacturer, Electrolux, controls more than 10% of the regional market. Second to Electrolux is the German manufacturer Miele, which is followed by another Germany company , BSH.

Dyson of the UK, is the fourth largest manufacturer in Europe. This is a remarkable position for the company, given that it only started to manufacture in 1990s. The % volume corresponds mainly at a UK market.

Manufacturer	% volume
Electrolux AB	15,6
Miele	8,8
BSH	7,7
DYSON	8
HOOVER	6,2
Group SEB	4,6
Philips	3,5
Moulinex SA	2,4
Delongui Spa	1,8
Matsushita Electric Industrial (Panasonic)	1,2
Daewoo Group	1,0
Samsing Group	0,7
Others	39,2

National manufacturer volume shares

BSH and Miele has a significant market in Germany and Netherlands. Electrolux has its bigger market share in Sweden and a good market share in Germany and France.

Manufacturers	Germany	Italy	Sweden	France	Spain	UK	Netherlands
BSH	15%		9%	7%	3%		12%
Miele	15%		12%	5%		3%	19%
Philips	3%		2%	11%	2-3%		15%
Electrolux	16%		55%	11%		19%	9%
Moulinex				10%	11%		8%
Tornado				12%			
Chromex				10%			
Hoover	5%	12%				11%	
Delongui		15%					
Rowenta	3,6%	18%		16%	9%		
Daewoo		8%		1,5%	1,9%		
Samsung		6%		1,3%	6,4%		3,9%
Matsushita (Panasonic)			8%		27%		
Electrodomesticos Solac					10%		
Dyson						34%	
Private label	9%		15%	3%		3%	3%
Others	30%	41%	1%	12%	36%	30%	17%

Source Euromonitor 1998

3.4 RETAIL DISTRIBUTION

Vacuum cleaner appliances : National volume sales Growth 1999/1998

In France the national volume sales growth represents for 1999/1998 +9% above national average
Some data for the sales on the national market in France

Price in euros	% of sales
More than 213 euros	**25**
Price between 152 and 213 euros	**20**
Price between 122 and 152	**22**
Price between 91 and 122	**15**
Price inferior to 91	**18**

Consumers studies « WHICH » and « 60 millions de consommateurs » 1999

The average price depends of the country where the product is sold and depends in fact of the type of retailors. In Germany the average price is about 104 euros, in France 134 euros, in UK 126 euros and in Italy 115 euros. It depends also of the different accessories sold with the vacuum cleaner. Taxes are also more or less important in each country.

The retailors communicate to consumers on price, on power, on level of filtration, on noise and on facility of use. Criteria on design and ergonomy are also important.

Distribution in relation with the type of stores in France

Countries	Hypermarket	Specialized stores like DARTY in France	Independant stores	BHV Samaritaine	Sales by mail order
France	46	29	11	2	10
GB	35	29	11		
Germany	30	21	19	6	
Spain	42		15		
PB	20	49	5		

Source Euromonitor 1998

The distribution of vacuum cleaners in most major markets is limited mainly to specialist outlets and department stores . In France , Spain and Sweden grocery multiples/hypermarkets are a major type of retailer for vacuum cleaners. In Italy, UK, Sweden, Netherlands and Germany specialist stores account for over 50% of volume sales of vacuum cleaners. In hypermarket we find in general products with the first price.
In the specialized stores we find either some brands with an average price either a large range of models at different prices from lower to higher.

4 INVENTORY OF SCHEMES, STANDARDS AND TEST METHOD

4.1 NATIONAL LABEL AND PRIVATE LABEL

4.1.1 ➢There is only an official ecological label on vacuum cleaners. It is the French mark NF Environnement which concerns sled type vacuum cleaners. It is the official label managed by AFNOR CERTIFICATION and having the same demarch than the European ecolabel.

This label proposes criteria on energy content of materials, durability, repairability and maintenance, energy consumption, vacuum cleaner dust emission, noise, prevention of ecotoxicological hazards and incentive towards recovery and fitness for use as dust removal test and suction head motion resistance.

4.1.2 ➢There is a self declaration or a private label implemented by one producer like « ecofriendly ». In this guideline the vacuum cleaner must present :

Reduction of energy consumption
Reduction of noise
Reduction of dust emissions and fight against allergy with ecological filters

4.1.3 ➢There is in Germany a label on energy called « Ecotech » for the reduction of energy

For the moment the Energy label doesn’t concern the vacuum cleaners.

4.2 STANDARDS AND TEST METHODS

For the vacuum cleaners it exists national standards for fitness for use but also CEI standards for measurement of energy consumption, for fitness for use, for measurement of dust emissions and so on. It should not have problems with the choice of standards
Example of standards : EN 60-312 and EN 60 704-3

5 ENVIRONMENTAL ISSUES

5.1 Life cycle impacts of vacuum cleaners

At first, if we want compare vacuum cleaners between themselves, we must propose a functional unit. We can class the vacuum cleaners in relation to their function to aspirate dust.

After a first request the environmental impacts of a vacuum cleaner exist at different steps of life cycle of the product as manufacturing, use, disposal.

- Energy use concerns the step of the extraction of raw material and manufacturing of materials and this of use

- Use of resources concerns all the steps manufacturing, use and disposal

- Emissions concern mainly the step of use

- The management of waste concerns the manufacturing and disposal

- The safety concerns the use

- Nuisances as noise pollution concern the step of use

- The durability as technical life time, as reparability, as reusable of some materials, as recyclability concerns also mainly the use

- The use and the disposal are concerned too by valorisation road, information of the consumer.

We can see that the step of use, manufacturing and disposal are the main steps where there are impacts on the environment.

A study (read in DEEDS Publications) on design for Environment decision support (december 96) shows that the key environmental impacts of the vacuum cleaner were :

➢Use –power consumption is the most significant impact

➢Manufacture –component which sed significant amounts of copper and aluminium are the most problematic : the fan unit, cord winder and power cable

➢Energy consumption during manufacture

➢The other life cycle stages of transportation of materials, distribution, use of waste bags and final disposal have relatively minor impacts.

➢The final disposal is considered to have an environmental benefit if we make the assumption that the metals are recycled.

5.1.1 EXTRACTION OF RAW MATERIALS AND PRODUCTION OF MATERIALS

Looking to the percentage of each material in the vacuum cleaners composition, as plastics, metals electric equipment rubbers.., the impact on the environment can be improved in relation to the raw materials used.

The composition of vacuum cleaners depend of the product but , in general, we will find plastic like ABS, polycarbonate, polyethylene and others, metals, electrical equipment, rubbers, and so on.

Material family	Material	Parts of the vacuum cleaner
Matals 40%- 60%	Aluminium Steel Copper	Tubes and pars of the engine Sucker, parts ofthe engine Engine for the blower, electric wire
Plastic 30%- 65%	Polypropylene (PEP) ABS Polystyrene PVC POM,PA,PC	Body of the vacuum cleaner Label, electric wire High technology parts, engine, straps
Rubber 1-2%		Seal
Paper , textile 1-2%		Bag, filter

5.1.2 PRODUCTION OF THE VACUUM CLEANER

It is very complicated to have data on the different pieces of the vacuum cleaner. Very often each piece corresponds to one supplier and it is difficult to have environmental data on this part. It seems that the impact on the environment due to the assembling of the vacuum cleaner is minor in relation to others steps like extraction of raw materials and manufacturing of materials.

5.1.3 USE OF THE VACUUM CLEANER

Different impacts on the environment concern this step :

a) raw material and energy

raw materials

The use of a vacuum cleaner asks the periodic renewal of paper bags and /or filters.
Raw material is used even if the bag is made in paper (renewable ressources) and if it uses recycled paper.
The composition of filters is various like paper, textile, active coal..
New technologies permit to propose to the consumer filters reusable.

Energy

The use of vacuum cleaners involves an energy consumption and consequently a non renewable raw material consumption like fuel, gas...In relation of Life cycle analysis this consumption can be easily estimated when we know the power of the vacuum cleaner and its use life.
The power of suction will depend also of the type of process. For example, between a vacuum cleaner with a bag and a vacuum cleaner without bag, we can see differences on suction power and also on maintenance in the time of suction power.

The calcul of the energy consumption can be made following the European standard Pr EN 60312 (publication date oct 2001). The consumption of a vacuum cleaner is in general between 200 and 250 W/h.

b) atmospheric emissions

When we use a vacuum cleaner, there is an air movement caused by the succion and involve dust emissions in suspension in the atmosphere which can give allergy problems.

In order to reduce this problem, vacuum cleaners have more and more efficient system for the filtration (some times 4 or 5 filters).
These systems correspond to the use of a paper bag with a double thickness, a motor filter, one or many air filters, micro filters which garantee 99,9% of air purity.

Other systems exist like the vacuum cleaner of POLTI , the « Lecologico », which uses water for a first filtration and after until 8 filters for the smallest dust particles.

c) noise

The noise is an environmental nuisance. The reduction of the noise depends a lot of the manufacturing of the vacuum cleaner, of the materials used and of the airtightness of the vacuum cleaner's body. We must consider this parameter.

Some times the consumers think that the performance of a vacuum cleaner depends of the noise. More it is noisy more it is efficient. So if we will ask for a reduction of the noise, an information will be necessary.

d) waste

The use of a vacuum cleaners involves wastes (bags with a lot of dust, dirty filters, deodorant for vacuum cleaners).

5.1.4 END OF LIFE

At the end of the life the vacuum cleaner is a waste. Many solutions exist

The consumer gives back the vacuum cleaner to his retailor. At this moment we must think to the operation of dismantling, recovery of some pieces or materials

The producer takes back the different vacuum cleaners in conformity with the directive on electronical and electric materials

6 ISSUES FOR DISCUSSION

The main areas identified for improvment in the product are following a study of december 96 :

➢Use – lower wattage motors, more efficient motors and to develop a vacuum cleaner which reduces vacuuming time

➢Manufacture – the specification of materials with a recycled content such as copper could reduce the impacts of the materials. The possibility of using less materials would also significantly reduce the environmental impact of manufacture.
(deeds publication dec 96)

so the main issues for the next work will be

➔Energy content of the materials

Energy consumption necessary for manufacturing materials. A vacuum cleaner is made from different materials as copper, plastics like PVC , ABS,PEHD..used sometimes as raw material and sometimes as recycled material.

➔Optimization of the life cycle of a vacuum cleaner

To reduce consumption of natural resources we can increase life cycle of the product. Today a lot of vacuum cleaners propose between 500 and 600 hours.

➔Improvment of the reparability

➔Energy consumption during use

➔Difference between nominal power and useful power

➔Dust and filtration

➔Noise

➔Electrical safety

➔Prevention of toxicologic risks

➔cleaning performance (efficiency of picking up dirt and dust)

7 VIEWS OF INTERESTED PARTIES

7.1 MANUFACTURERS AND SUPPLIERS

Some manufacturers already contacted told us that they were more interested by an european ecolabel and that their strategy will depend of the demand of the market as retailers for example.
When we consult their Internet site, all of these producers speak about their environmental strategy and the taking into account of the Environment in the conception of their products. Very often the energy is one of the points underligned.

Very often these companies have an head office in a country and subsidiary companies in others countries. The strategy are defined either by the head office either directly by subsidiary companies.

7.2 CONSUMERS

When we consult different studies by consumers associations (« Which » 99 English association) or « testé per vous » from CLCV (French association) the main criteria checked are, of course, quality criteria. There are also a lot of information on allergic problems and on the difference between the vacuum cleaners taking into account this argument. Energy consumption is also a criteria which is checked and appreciated.

7.4 RETAILERS

Retailers for the sales by email like 3 Suisses in France is very interested by the European Ecolabel. At the moment there are some meetings with retailers to motivate them to ask for the European Ecolabel. These retailers have very often only one purchasing group for the European market so if we have their agreement it will be a good thing. Today we have already some green retailers and the demand will come from them.

8 CONCLUSIONS AND RECOMMANDATIONS

In this chapter the main conclusions and recommandations with regard to the feasability of an European Eco-label for a vacuum cleaner are presented.
The Commission and the Competent Bodies must take into account that the data and information written in this study are mainly been defined during interview with the producers, with some retailers, consumers and others stakeholders. Some bibliographic studies have also been used.

There is not European studies made by the European federation on this product so perhaps we could continue to research other datas to be more complete but I think that it is not really necessary for taking a decision.

8.1 CONCLUSION

Today consumers have no possibility to recognizea vacuum cleaner more friendly for the environment (noise, health, energy..). The European Eco-label ɘ could permit to valorize the efforts made by the producers on some existing improvement like noise, health, energy,.the eco-conception of a product and the taking into account of other parameters.
Consumers want to be reassured on the information brought by the producers and the European Eco-label ɘ is a very good tool for that.

For some stakeholders the European Eco-label ɜ is a way to improve quality of interior air and avoid health problems ; for others people it is a way to put on the market quality products with a good efficiency and to prioritize the use of some materials, to reduce energy consumption.

All of them have a reason to promote the European Eco-label ɜ .

All the retailers which have an environmental image are ready to propose to their customers a product more friendly for the Environment.

The producers ask very often for the eco-label if their customers as retailers ask them to be conformed to the criteria. So it means that it is time to launch the European Eco-label for vacuum cleaners and to realize a communication sensitive to retailers.

8.2 RECOMMANDATIONS

For the moment we have no competitive with the energy label so it is interesting to develop an European eco-label ɜ now and to anticipate the works on energy label.

To extend the range of household appliances, it is necessary also to propose vacuum cleaners with an European Eco-label ɜ

Make optimal use of existing eco-label and individual initiatives.

Start with one product group like sled type vacuum cleaners and upright vacuum cleaners for extending in the future to others types of vacuum cleaners as professionnal vacuum cleaners.

ANNEX 1

Consideration whether this a priority group (turn table at the end of the meeting of 5st of june)

Markets	**Position**
a) Does the product represent significant volume of sales and trade in the internal market	Yes
b) An opportunity and incentive to manufacturers/service providers to seek a competitive advantage	Yes (both in terms of energy and efficiency improvments)
c) Significant sales volume sold for final use	Yes
d) Are there public/private procurement markets	No
e) Is the market dominated by a few large manufacturers	No
f) Is the market dominated by many small manufacturers	Yes
Environment	
g) Involve significant environmental impacts on global, regional or general basis	Not as significant as many other products
h) offer opportunity for significant environmental improvment through consumer choice	Yes
Stakeholders	
i) Stakeholder interest	Yes
j) Health aspects for consumers	Yes
k) Is it a useful, everyday product ? Or a luxury item ?	Yes No
Ecolabel scheme	
l) Fits in with ecolabel marketing strategy	Yes
m) Opportunity to enhance scheme's visibility	Yes
n) Are there links to other European ecolabel scheme's ?	Yes

ANNEX 2

Follow up of the contacts

Fax sent to COMERCIAL UFESA on 21/10/99

Questionary sent to competent bodies on 24/11/99 (annex 2)

Questionary sent to French producers on 29/11/99 (annex 3)

E-mail sent to Siemens in Germany on 11/01/2000

E-mail sent to Electrolux in Sweden on 11/01/2000

Letter sent to an English consumers's association which is also a research and testing centre with a magazine WHICH

Call phone and letter sent on 12/99 To CECED, European Association of applicances

Call phone and e-mail sent to AMDEA, Mr Maconnacher, English association of manufacturesr of Domestical electrical appliances on 14/01/2000

Call phone to UNETO Dutch association of electrical retailers, Mr Mons, on 18/01/2000

Meeting with DYSON, ELECTROLUX, POLTI, UNIFESA, G3FERRARI in CONFORTEC

French meeting with GIFAM and producers as Electrolux France, Hoover, Bosch, Moulinex, Dyson, Vorweck, Samsung, Rowenta

Visit to the company DYSON in England

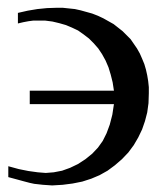
Meeting of the working group on 24 st of april in Brussels

Life cycle assessment of an Electrolux vacuum cleaner : an evaluation of LCA tools (DEEDS Publications)

Internet adress used :
www.appliance.com
www.siemens.com
www.g3ferrari.com
www.dwe.co.kr/product/cleaner.phtml
www.electrolux.com
www.miele.com
http://sun1.mpce.stu.mmu.ac.uk/pages/projects/dfe/deeds/publicat

ANNEX 3

Proposal of criteria



Proposal for criteria

Steps of the life cycle	Assessment	Environmental impacts	Proposal
Raw material extraction and material manufacturing	Important use of metals and plastics	Exhaustion of non renewable resources (energy and raw material)	Limit the quantity of raw material used in the manufacturing of vacuum cleaners
Manufacturing of vacuum cleaners	Improved design	Consumption of raw material	Improved lifetime of vacuum cleaners Improved reparability and dismantling
Use	Electricity use Dust emissions Noise Safety	 Allergies Noise nuisance Electrocution	Improved energy efficiency Limitation of nominal power Information of the consumers on the best maintenance Improved quality of the filtration Limit the noise of the appliance Be conformed with safety standards
End of life	Several fields		Information of consumers Anticipate electronic waste directive

1. SCOPE OF APPLICATION

1.1 Definition

All vacuum cleaners which are fit to aspirate dust like cylinder, upright and hand held vacuum cleaners

1.2 Following could be excluded from the scope of application :

- water suction vacuum cleaners
- suction floor polishers
- special use vacuum cleaners (e.g. cleaning of clothing or cars)
- vacuum cleaners specifically intended for industrial applications
- centrally-sited vacuum cleaners
- cordless or rechargeable vacuum cleaners
- "2 in 1" type cleaners : dust and liquid pick-up vacuum cleaners : Canister-type vacuum cleaners
- washers/rinsers
- steam cleaners
- injector/Extractor type vacuum cleaners

The appliances should comply with the essential requirements of the Directives :
- low voltage 73/23/EEC - electromagnetic compatibility 89/336/EEC **modified by the Council Directive 93/68/EEC**

2. ECOLOGICAL CRITERIA

Criterion n°1 : Energy content of the materials

Only those materials figuring in the attached table could be taken into account, and this solely for parts having a mass > 50 g.

Energy content of the vacuum cleaner* ≤ 700 MJ

The calculation is made thanks to the attached table (values should be updated).

This requirement could be checked by the auditor. The manufacturer could provide a declaration stating the the product's constituent materials as well as their respective masses.

Criterion n° 2 : Durability

2.1 Durability of the motor (according to standard IEC 312 article 19.1)

t ≥ 550 hours

To day a lot of vacuum cleaners have a life time between 500 and 600 hours

2.2 Durability of the power nozzles (according to standard IEC 312 article 20.1)

durability ≥ 500 drum rotations

2.3 Durability of the hoses (according to standard IEC 312 article 20.2)

durability ≥ 40 000 oscillations

The applicant couldl provide the results of the tests carried out by an authorized laboratory or by the producer's laboratory according to standard IEC 312 or EN 60-312.
In fact a lot of applicant's laboratories are very well equipped and we could accept their own tests

Criterion n°3 : Repairability - Maintenance

The spare parts required for ensuring correct operation of the appliance will remain available during a period of 10 years after the appliance has stopped being produced. These parts are in particular :
- the power nozzles and bent tubes,
- the hoses and extension tubes,
- the filters,
- the bags.

This requirementcould be checked by the auditor.

* *by vacuum cleaner will also be meant the tubes and the main power nozzle (if need be the rotating brush). The accessories, packaging and bags are not counted.*

Criterion n°4 : Energy consumption

4.1 Consumption for 5 strokes over a 10 m2 area
(according to standard NF C 73-161)

E < 250 Wh for a vacuum cleaner without power-driven brush **E < 275 Wh** for a vacuum cleaner with power-driven brush

4.2 Efficiency according to standard IEC 312

Output : ηmax > 18%

The applicant will provide the results of the tests carried out by an authorized laboratory or by the producer's laboratory according to standard IEC 312.
The results of the producer's laboratory will be accepted subject to a previour agreement of the competent body.

Criterion n°5 : Maintenance

5.1 Level indicator

A level indicator could be required for vacuum with bags or without bags.

5.2 Information

Instructions intended for the consumer will indicate the vacuum cleaner's maintenance procedures (changing of filters, of bags). The consumer must be able to access these instructions easily. By way of example, the instructions may be located inside the vacuum cleaner in the part housing the bag or on the bag itself if there is a bag.

These informative instructions could be checked by the auditor.

Criterion n°6 : Vacuum cleaner dust emission

6.1 Dust emission rate (according to EN 60-312 or English method with NaCl)

Let Q be the quantity of dust rejected per m^3 sucked up

Q < 0,05 mg/m^3

The applicant could provide the results of the tests carried out by an authorized laboratory according to the standard EN 60 312 or a method using NaCl (English method)

About filters we should be lo decide on the type of filters . Some of them use biocid.

6.2 Replacement of the filters

Filters will be light coloured so as to reveal the degree of clogging up to the user.

This requirementcould be checked by the auditor.

Criterion n°7 : Noise (according to standards EN 60 704-2-1 and EN 60 704-3)

Declared sound power ≤ 80 dBA reference 1 picoWatt

The Noise criterion should be measured according to standard NF EN 60 704-2-1 and the declaration will be checked according to standard NF EN 60 704-3.

The applicant could provide the results of the tests carried out by an authorized laboratory or by the producer's laboratory according to standards EN 60704-2-1 and EN 60704-3.

Criterion n°8 : Prevention of ecotoxicological hazards and incitement towards recovery

8.1 Absence of heavy metals such as cadmium, lead, chromium (VI) oxide, mercury and arsenic in the plastics (with the exception of the electrical and electronic components), in particular owing to dyes.

The tolerance threshold on the basis of the analytical results is 1000 ppm per element except for Cadmium for which the tolerance threshold is 100 ppm.

8.2 Electrical and electronic components containing heavy metals must be able to be easily isolated (when conducting repair operations or at the end of the vacuum cleaner's life).

This criterion could be checked by the auditor.

8.3 For plastic components having a mass > 50 g, permanent marking must make it possible to identify the following substances : polypropylene, polystyrene, PVC, HDPE, LDPE, ABS, polyamide and others.

The marking is carried out according to standard ISO 1043. This requirement could be checked by the auditor.

3. FITNESS FOR USE CRITERIA

Functional unit : To suck up an embedded quantity of dust present on a defined, standardised surface area, complying with the requirements laid down by the fitness for use criteria.

Criterion n°9 : Dust removal test

on a standardised Wilton carpet :	**k > 60 %**	for a vacuum cleaner without power-driven brush
on a standardised Wilton carpet	**k > 70 %**	for a vacuum cleaner with power-driven brush
on hard, flat floors :	**k > 98 %**	
on floors with crevices :	**k > 90 %**	
where k = dust removal capacity		

The applicant could provide the results of the tests carried out by an authorized laboratory or by the producer's laboratory according to standards IEC 312, amendment 1 (excluding amendments 2 and 3 or EN 60-312). The results of the producer's laboratory should be accepted subject to a previour agreement of the competent body.

Criterion n°10 : Suction head motion resistance

R < 40 N

The applicant will provide the results of the tests carried out by an authorized laboratory (see annex 7) or by the producer's laboratory according to standard IEC 312 article 18 or EN 60-312.
The results of the producer's laboratory will be accepted subject to a previour agreement of AFNOR CERTIFICATION.

SUMMARY TABLE

N°	CRITERION	ACCEPTANCE THRESHOLDS or requirement level	METHOD OF PROOF
1	Energy content of materials solely for the materials of the table and for parts having a mass > 50 g	≤ 700 MJ	Manufacturer declaration Checking by auditor
2.1	Durability of motor	≥ 550 hours	test report according to EN 60-312
2.2	Durability of power nozzles	≥ 500 drum rotations	test report according to EN 60-312
2.3	Durability of hoses	≥ 40 000 oscillations	test report according to EN 60-312
3	Repairability	Spare parts availability	Declaration on one's honour Checking by auditor
4.1	Energy consumption	for 5 strokes over a 10 m^2 area E < 250 Wh (without power-driven brush) E < 275 Wh (with power-driven brush)	test report according to NF C 73-161
4.2	Output	ηmax >18%	test report according to EN 60-312
5	Maintenance	Bag fill level indicator Consumer information on appliance	Checking by auditor
6.1	Emission of rejected dust	quantity < 0,05 mg/m^3	test report according to EN 60-312
6.2	Replacement of filters	light coloured filters	Checking by auditor
7	Noise	sound level ≤ 80 dBA	test report according to EN 60 704-2-1 and EN 60 704-3
8	Prevention of ecotoxicological hazards and incitement towards recovery	absence of heavy metals in the plastics electrical and electronic components containing heavy metals able to be easily isolated permanent marking for plastic compounds of mass > 50 g	Checking by auditor
10	Dust removal tests	on standardised Wilton carpet :k > 60 % (without power-driven brush) on standardised Wilton carpet : k > 70% (with power-driven brush) on hard flat floor : > 98 % on floors with crevices : > 90 %	test report according to EN 60-312
11	Suction head motion resistance	R< 40N	test report according to EN 60-312

ENERGY CONTENT

PLASTICS	MJ/kg
HDPE	80,98
LDPE	88,55
PP	80,03
PVC (electric wires excepted)	66,80
PS	101,38
ABS	97,50
Others	83,36
Recycled plastics	25,00
METALS	
Stainless steel	25,00
Soft steel	11,50
Primary Aluminium pig	175,00
100% recycled Aluminium	12,50
Copper (electric wires excepted)	10,10
Nickel	77,50
Zinc	41,50
ELECTRICAL EQUIPMENT	
Electric wires	5,00
RUBBERS	
Industrial rubber	19,20
Synthetic rubber	17,10

This matrix should be updated

* sources :CEREN/French agency of the Environment Ademe data 1996
sources PWMI 1998