

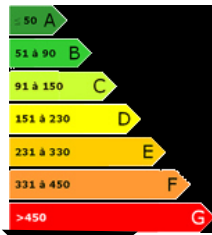
Big computer plus screen



Stand-by ??

Informatics

230V AC



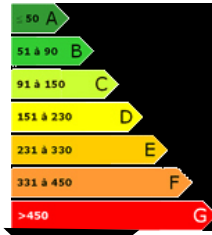
Laptop



Stand-by ??

Informatics

230V AC
12V DC*



* with special adaptor

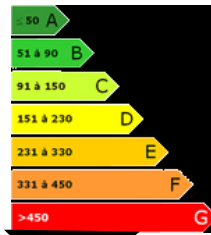
Printer



Stand-by ??

Informatics

230V AC



$$1 \times 5 \times 200 =$$

(number) h / day watts wh

$$1 \times 5 \times 40 =$$

(number) h / day watts wh

$$1 \times 5 \times \begin{matrix} \text{Inkjet:} \\ 20 \\ \text{Laser:} \\ 80 \end{matrix} =$$

(number) h / day watts wh

Router/modem



Informatics

230V AC

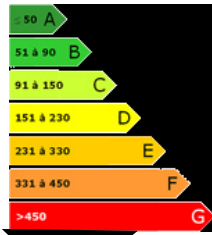


Little gadgets for computer



Informatics

230V AC



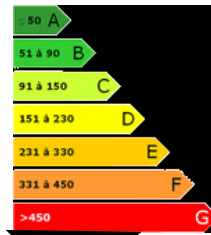
Copying machine



Stand-by ??

Office

230V AC



$$1 \times 24 \times 10 =$$

(number) h / day watts wh

$$1 \times 5 \times 5 =$$

(number) h / day watts wh

$$1 \times 8 \times 40 =$$

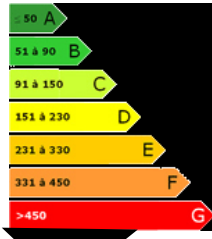
(number) h / day watts wh

**Very old fridge
combined with freezer**

Kitchen



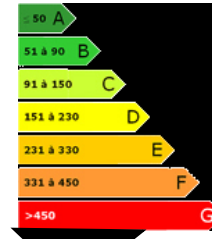
230V AC



$$1 \text{ (number)} \times 1'500 \text{ Wh/day} = \text{Wh}$$

Kitchen

230V AC



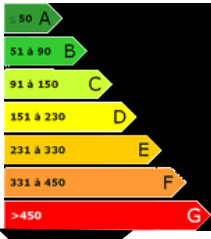
$$1 \text{ (number)} \times \text{Wh/day} = \text{Wh}$$

**Fridge
(no freezer)**

Kitchen



230V AC



$$1 \text{ (number)} \times \begin{matrix} \text{A:} \\ \text{B:} \\ \text{C:} \\ \text{D: 350} \\ \text{E: 400} \end{matrix} \text{ Wh/day} = \text{Wh}$$

Air conditioning

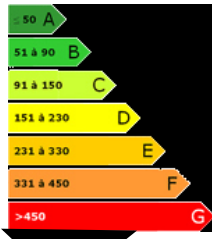
Household



230V AC



Stand-by ??



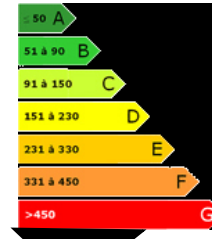
$$1 \text{ (number)} \times 10 \text{ h / day} \times 2000 \text{ watts} = \text{Wh}$$

Solar fridge

Kitchen



12V DC



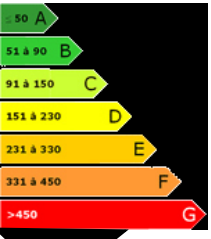
$$1 \text{ (number)} \times 250 \text{ Wh/day} = \text{Wh}$$

Car cooling box

Kitchen



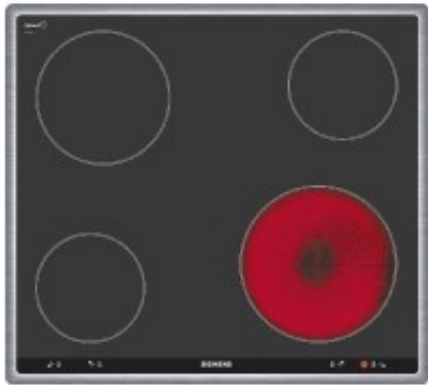
12V DC



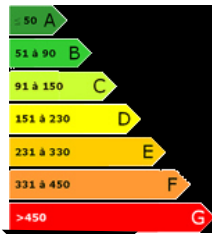
$$1 \text{ (number)} \times 1'300 \text{ Wh/day} = \text{Wh}$$

Cooking plate

kitchen



230V AC
380V AC

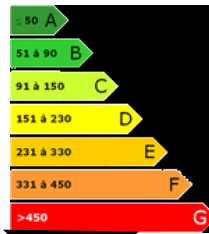


Electrical oven

kitchen



380V AC



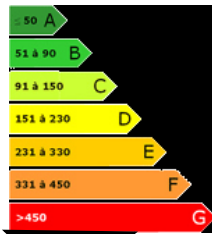
Stand-by ??

Water kettle

kitchen



230V AC



1 (number) x 2 h / day x 1200 watts (-2000) Wh =

(Standard dish, medium size oven)

1 dish x 1250 Wh (-2000) Wh =

3 (times) x 1 litre x 120 Wh/l =

Toaster

kitchen



230V AC

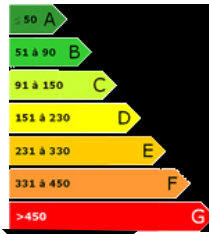


Microwave

kitchen



230V AC



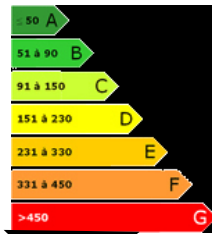
Stand-by ??

Blender

kitchen



230V AC



1 (runs) x 40 Wh/run =

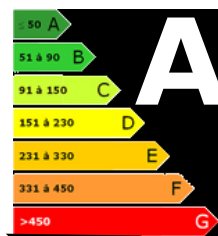
1 (number) x 0.1 h / day x 800 watts =

1 (number) x 0.1 h / day x 500 watts =

Neon tube

Illumination

230V AC



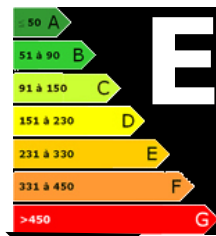
Incandescent lamp



(Halogen or 'regular')

Illumination

230V AC

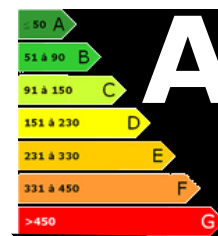


Compact fluorescent lamp



Illumination

230V AC (12V DC)



1

x

5

x

25
(15-60)

=

1

x

5

x

60
(25-100)

=

1

x

5

x

11
(5-18W)

=

(number)

h / day

watts

Wh

(number)

h / day

watts

Wh

(number)

h / day

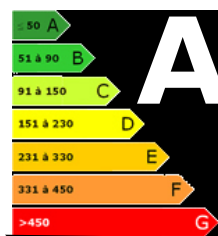
watts

Wh

LED spot

Illumination

12V AC/DC



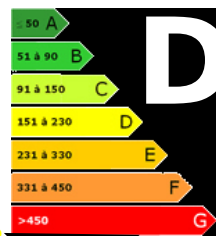
Strong halogen spot



Stand-by ??

Illumination

230V AC



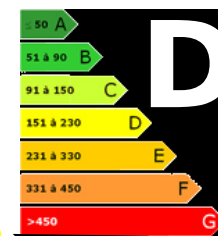
Small halogen spot



Stand-by ??

Illumination

12V AC/DC



1

x

5

x

5
(3-9)

=

1

x

5

x

150
(-300)

=

1

x

5

x

25
(-40)

=

(number)

h / day

watts

Wh

(number)

h / day

watts

Wh

(number)

h / day

watts

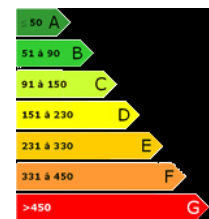
Wh

Solar cooker



Kitchen

230V AC

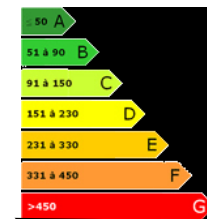


Electrical household water heater



Hot water

230/360V

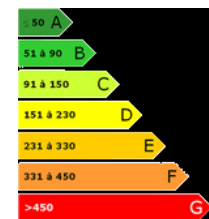


Coffee machine



Kitchen

230V AC



$$1 \times 5 \times 0 = \text{Wh}$$

(number) h / day watts Wh

$$150 \times 60 = \text{Wh}$$

(litres) Wh/litre Wh

$$1 \times 200 = \text{Wh}$$

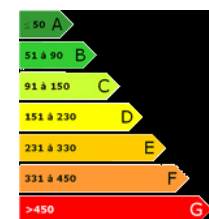
(standard values) (150-550) Wh/day Wh

Vacuum cleaner



Household

230V AC

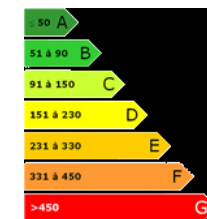


Solar collector (stand alone)



Hot water

230V AC

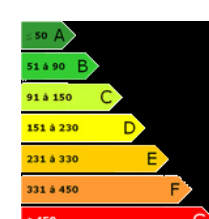


Smart phone



Communication

230V AC



(EU: max. 900W)

$$1 \times 1/4 \times 800 = \text{Wh}$$

(number) h / day (600-2200) watts Wh

$$1 \times 24 \times 0 = \text{Wh}$$

(number) h / day watts Wh

$$1 \times 15 = \text{Wh/day}$$

(number) Wh/day

Solar torch

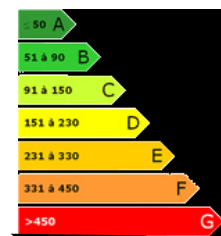
Illumination

Fan

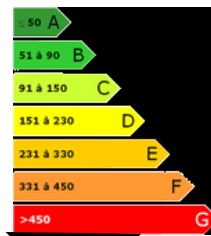
Household

Solar collector (with pump)

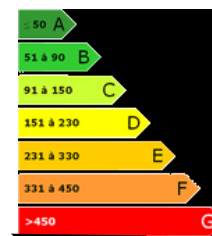
Hot water



230V AC



230V AC



$$1 \times \frac{1}{2} \times 0 =$$

(number) h / day watts Wh

$$1 \times 8 \times 40 =$$

(number) h / day watts Wh

$$1 \times 10 \times 30 =$$

(number) h / day watts Wh

Tesla car

Transport

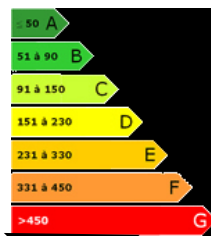
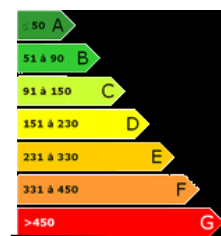
Bycicle

Transport

Playstation (etc.)

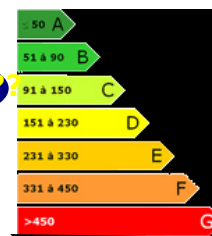
Communication

230V/400V



230V AC

Stand-by ?



$$1 \times 40 \times 250 =$$

(number) km/ day Wh/km Wh

$$1 \times 1 \times 0 =$$

(number) h / day watts Wh

$$1 \times 2 \times 150 =$$

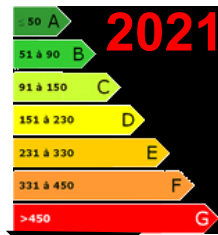
(number) h / day watts Wh

Dishwasher

Kitchen



230V AC



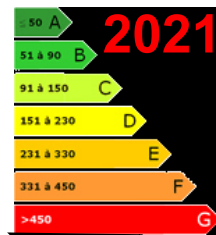
1 run(s) × A: 900 Wh/run
C: 1200 Wh/run
F: 1600 Wh/run

Any freezer (frontload)

Kitchen



230V AC



1 (number) × A: 500 Wh/day
B: 600 Wh/day
C: 500 Wh/day
D: 500 Wh/day
E: 600 Wh/day

Any freezer (topload)

Kitchen



230V AC



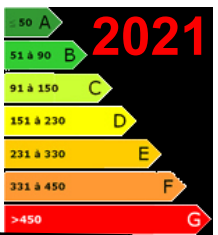
1 (number) × A: 450 Wh/day
B: 550 Wh/day
C: 450 Wh/day
D: 450 Wh/day
E: 550 Wh/day

Any fridge combined with freezer

Kitchen



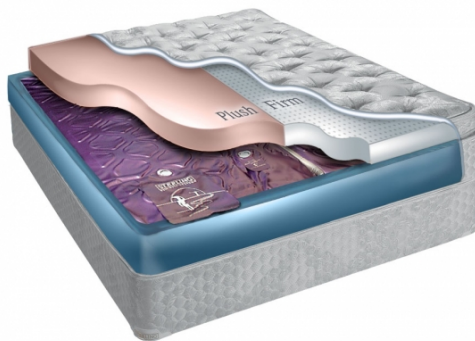
230V AC



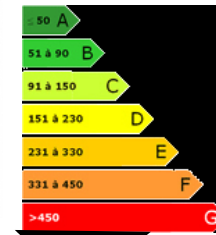
1 (number) × A: 450 Wh/day
B: 550 Wh/day
C: 450 Wh/day
D: 550 Wh/day
E: 600 Wh/day

Waterbed

Household



230V AC



1 (number) × 600 Wh/day

Portable electric radiator

Household



230V AC



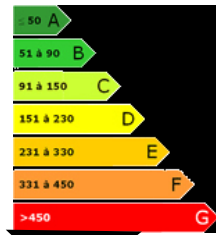
1 (number) × **8** h / day × 2000 (500-2500) watts

Big hi-fi stereo

sound



230V AC



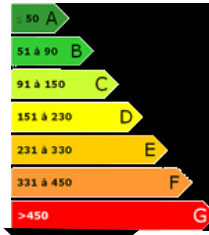
Stand-by ??

Car hi-fi

sound



12V DC



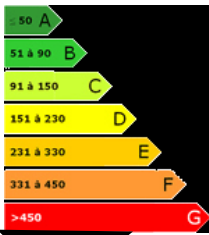
Stand-by ??

Portable radio / hi-fi

sound



230V AC
12V DC*



Stand-by ??

* with adaptor

1

x

8

x

40

(30-200)

=

1

x

8

x

10

(-100W)

=

1

x

8

x

5

=

(number)

h / day

watts

Wh

(number)

h / day

watts

wh

(number)

h / day

watts

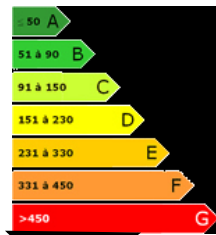
wh

Cordless phone

communication



230V AC

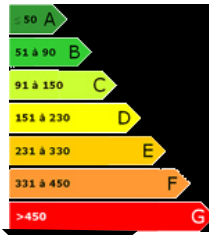


mobile phone charger

communication



230V AC
12V DC*



Stand-by ??

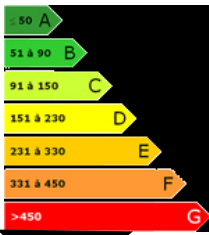
* car phone charger

ipod with base station

sound



230V AC
12V DC*



Stand-by ??

* with adaptor

1

x

24

x

5

=

1

x

3

x

5

=

1

x

8

x

5

=

(number)

h / day

watts

wh

(number)

h / day

watts

wh

(number)

h / day

watts

wh

Nespresso

Kitchen

Electric fruit dryer

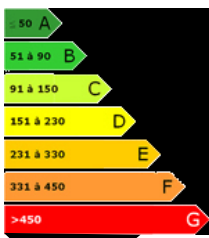
Kitchen

Handheld electric mixer

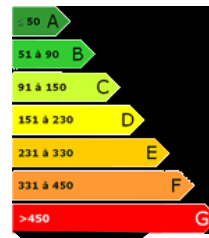
Kitchen



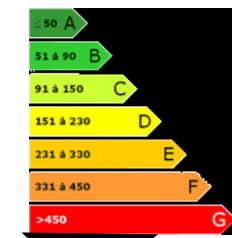
230V AC



230V AC



230V AC



1

$$1 \times \frac{100}{(80-180)} =$$

(1.5 kg fresh fruit)

1 Charge

$$1 \times \frac{7000}{(4500-9000)} =$$

1

$$\times \frac{1}{5} \times$$

$$\frac{250}{(150-500)} =$$

Wh

(standard values)

Portable loudspeakers

Sound

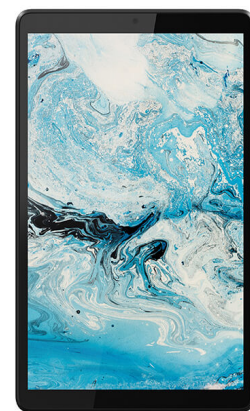
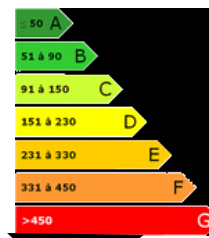
Tablet

Informatics

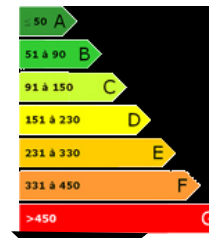
Video projector

Entertainment

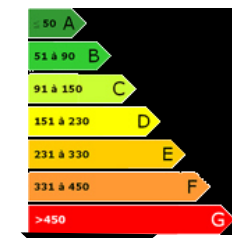
USB



USB



230V AC



(LED)

$$1 \times 4 \times 5 =$$

$$\times \frac{Wh}{Watt}$$

$$1 \times 5 \times 5 =$$

$$\times \frac{Wh}{Watt}$$

$$1 \times 2 \times$$

$$\frac{150}{(20-400)} =$$

Wh

Tube TV

TV

Flat screen TV

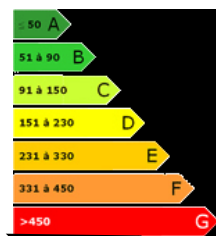
TV

Set top box

TV



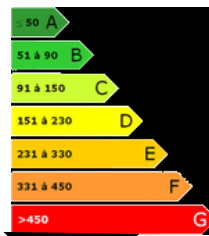
230V AC



Stand-by ??



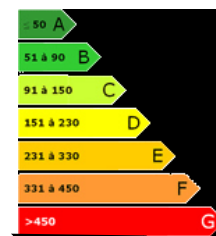
230V



Stand-by ??



230V



$$1 \times 4 \times \begin{matrix} \text{Small:} \\ 35 \\ \text{Medium:} \\ 100 \end{matrix} \text{ watts} = \text{Wh}$$

$$1 \times 4 \times \begin{matrix} \text{Small:} 30 \\ \text{Big, LED:} \\ 70-100 \\ \text{Big, plasma:} \\ 200-250 \end{matrix} \text{ watts} = \text{Wh}$$

$$1 \times 24 \times \begin{matrix} \text{Simple:} 5 \\ \text{With} \\ \text{harddisc:} \\ 20-30 \end{matrix} \text{ watts} = \text{Wh}$$

DVD / VHF

TV

Stand-by:
old devices

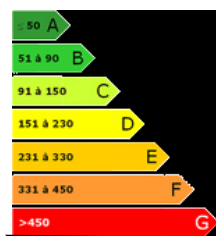
All household

Stand-by:
new devices

All household

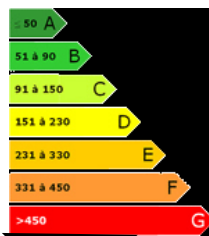


230V AC



Stand-by !!

230V AC



Stand-by !!

230V AC



$$1 \times 3 \times 10 \text{ watts} = \text{Wh}$$

$$5 \times 24 \times 10 \text{ watts} = \text{Wh}$$

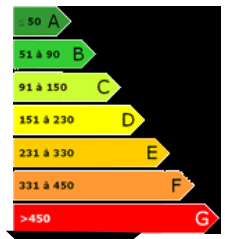
$$8 \times 24 \times 3 \text{ watts} = \text{Wh}$$

Washing machine



washing

230V AC

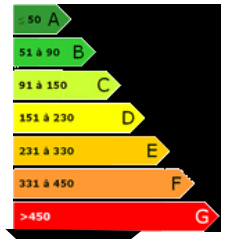


Clothdryer



washing

230V AC

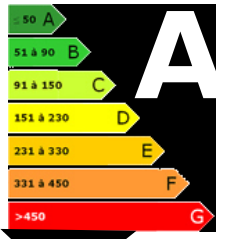


Condensing clothdryer



washing

230V AC



(5kg load)

1
(loads)

x
cold: 250
40°C: 600
60°C: 800
95°C: 1200
= Wh

Wh (4kg load)

1
(loads)

x 3000 = Wh

Wh (4kg load)

1
(loads)

x 1500 = Wh

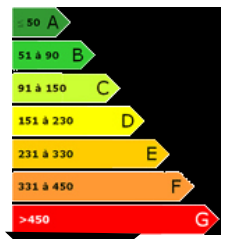
Wh

Iron



washing

230V AC

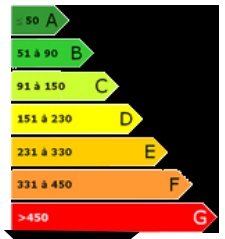


Hairdryer

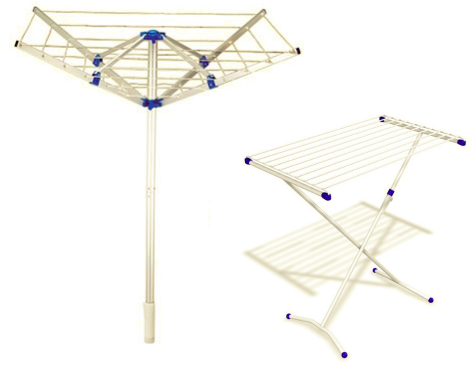


bathroom

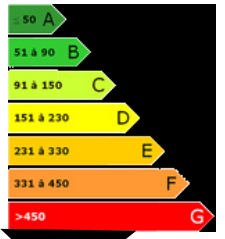
230V AC



Air/sun drying



washing



1
(number)

x 0.5
h / day

x 700 = Wh

1
(number)

x 0.2
h / day

x 1000 = Wh

1
(loads)

x 0 = Wh

Wh

Wh

Drone



Entertainment

230V AC

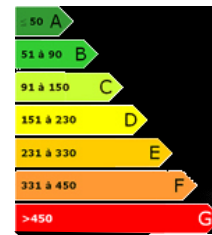


Internet via satellite



Informatics

230V AC



Electric bicycle



Mobility

230V AC



(Starlink)

(peddle assist mode)

$$1 \times \frac{1}{4} \times 50 = \text{Wh}$$

Hours/day
Watt

$$1 \times 24 \times 100 = \text{Wh}$$

Hours/day
Watt

$$1 \times 20 \times 7 = \text{Wh}$$

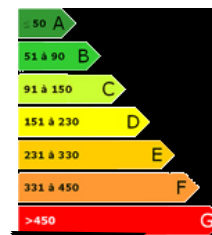
km/ day
Wh/ km

Micro scooter



Mobility

230V AC



Small electric car



Mobility

230V/400V



Travel by train



Mobility

230V AC



(per person)

$$1 \times 10 \times 7 = \text{Wh}$$

km/ day
Wh/ km

$$1 \times 40 \times 150 = \text{Wh}$$

km/ day
Wh/ km

$$1 \times 40 \times 100 = \text{Wh}$$

km/ day
Wh/ km

Satellite TV



TV

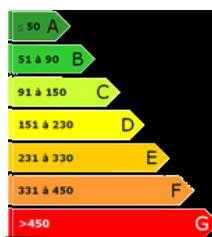
230V AC



Bycicle driven blender



Kitchen



Elektric motorbike



Mobility

230V/400V



$$1 \times 24 \times 20 = \text{Wh}$$

Hours/day
Watt

$$1 \times 0.1 \times 0 = \text{Wh}$$

Hours/day
Watt

$$1 \times 30 \times 80 = \text{Wh}$$

km/ day
Wh/ km

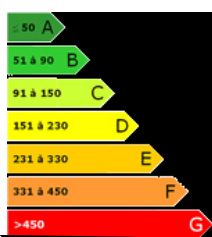
Electric scooter



(max. 45 kmh)

Mobility

230V AC

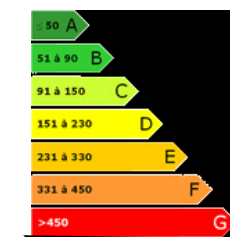


Heat pump Single family home



(Complete house, daily average, heating and hot water)

House heating



Travel by tramway



(per person)

Mobility



$$1 \times 20 \times 30 = \text{Wh}$$

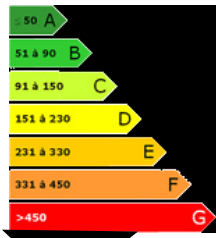
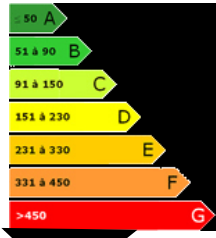
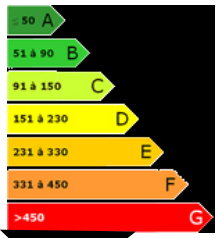
km/ day
Wh/ km

$$1 \times 6'000 = \text{Wh}$$

(Mingergie: 2'750)
Wh

$$1 \times 40 \times 125 = \text{Wh}$$

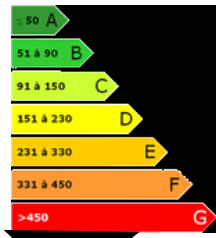
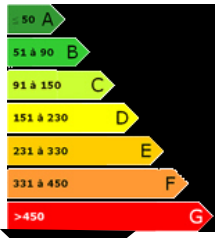
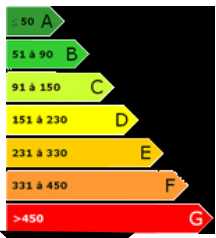
km/ day
Wh/ km



$$1 \text{ (number)} \times h / \text{day} \times \text{watts} = \text{Wh}$$

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$$1 \text{ (number)} \times h / \text{day} \times \text{watts} = \text{Wh}$$

1 1 1 1 1 1

A A

2 2 2 2 2 2

B B

3 3 3 3 3 3

C C

4 4 4 4 4 4

D D

5 5 5 5 5 5

E E

6 6 6 6 6 6

F F

7 7 7 7 7 7

G G

8 8 8 8 8 8

A+ A+

9 9 9 9 9 9

A++ A++

10 10 10 10 10 10

A+ A+

12 12 12 12 12 12

A++ A++