Household appliances, experience with noise emission declarations and labels

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BSH at a Glance

- Founded in 1967 as a joint venture between Siemens AG and Robert Bosch GmbH
- Since the beginning of 2015 BSH fully belongs to the Bosch Group
- Market leader in Europe, No. 2 in the world
- Sales revenue: 12.6 billion Euros (2015)
- Product portfolio: all modern home appliances
- Employees worldwide: 56,500
- BSH named as a top employer in numerous countries
- R&D rate global: 4%
- Around 3,500 R&D specialists in BSH’s international production and development network
- Customer service: more than 8,000 specialists in about 50 countries
Home appliances under the brands

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Local Heroes</td>
<td>![Logo] Thermador ![Logo] Balay ![Logo] Coldex ![Logo] Constructa</td>
</tr>
<tr>
<td>Label Brands</td>
<td>![Logo] PITSOS ![Logo] PROFILO ![Logo] ufesa ![Logo] zelmer</td>
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BSH Home Appliances Group is a Trademark Licensee of Siemens AG for the brand Siemens and of Robert Bosch GmbH for the brand Bosch.
BSH’s product portfolio covers the entire spectrum for daily life.

- Cooking and Baking
- Washing and Drying
- Dishwashing
- Refrigeration and Freezing
- Consumer Products
Bosch SilenceEdition

- Communication of noise emissions
- Comparison of noise levels
- Consumer and user expectation
- Experience of low noise emissions
- Competition
Experience low noise emissions

- Daily life sounds versus operating noise of an appliance
- Sound power versus sound pressure
- Visualization of noise emissions
- Ear protectors versus loud speaker symbols
Bosch bagless vacuum cleaner Relaxx‘x ProSilence 66

- Relaxx‘x ProSilence 66
  - SilenceSound System (innovative insulation materials, motor suspension, optimised airflow and sound reduced accessories)
  - Incredibly quiet 66 dB(A) sound power level
  - Famous tiger TV spot
Advertising noise emission

- “Silence” – a competition advantage
- “Silence” – an ergonomics and convenience feature
- Annoying noise not appreciated

Other relevant topics

- Explanation of „normal” noise; malfunction
- Acoustical feedback when working with the appliance
- Information requirements

→ Silence
Some marketing catchphrases

- **BOSCH**
  - Silence Edition

- **Dirt Devil**
  - Infinity EQU Silence

- **Rowenta**
  - Silence Soft

- **AEG**
  - ExtraSilent-Funktion
  - Silent System Plus
  - SilenceSound System

- **Miele**
  - S8 Silence Plus Allergy

- **Siemens**
  - AntiVibration Design

- **Electrolux**
  - Silent Air Technology

- **Liebherr**
  - leise

- **Russell Hobbs**
  - Buckingham Stainless Steel Quiet Boil Kettle

- **Vacuum in silence WITH ROWENTA**

- **Bauknecht**
  - Mehr als Technik
  - dank des innovativen Motors mit Direktantrieb.

- **Der leiseste beutellose Staubsauger am Markt.**
Declarations and limits

- Sound power level
  - Mandatory label and fiche
  - Mandatory information

- Mandatory sound power limit

- Marketing story
  - Sound power level
  - Sound pressure level
  - Sone level

- Mark (voluntary)

Examples

ProSilence 66
Testing and declaration of noise emissions

- IEC 60704 Household and similar electrical appliances – Test code for the determination of airborne acoustical noise –
  - Part 1: General requirements
  - Part 2-x: Particular requirements
  - Part 3: Procedure for determining and verifying declared noise emission values

- Principle / test room
  - anechoic / semi-anechoic (over reflecting plane) or
  - special reverberation or
  - reverberation test room
  (ISO 3743-1, -2, ISO 3744, ISO 3745)

- Program cycle averaging method ($L_{eq}$)

- Standardized loads and environment conditions (aligned with product specific performance standard)

- A-weighted sound power level, in dB re 1 pW

- Declaration and verification according specific regulations (national / regional level)
  and/or agreements amongst market players
IEC 60704 series Household and similar electrical appliances - Test code for the determination of airborne noise

IEC 60704-1 General requirements
IEC 60704-2-1 Particular requirements for vacuum cleaners
IEC 60704-2-2 Particular requirements for fan heaters
IEC 60704-2-3 Particular requirements for dishwashers
IEC 60704-2-4 Particular requirements for washing machines and spin extractors
IEC 60704-2-5 Particular requirements for electric thermal storage room heaters
IEC 60704-2-6 Particular requirements for tumble dryers
IEC 60704-2-7 Particular requirements for fans
IEC 60704-2-8 Particular requirements for electric shavers
IEC 60704-2-9 Particular requirements for electric hair care appliances
IEC 60704-2-10 Particular requirements for electric cooking ranges, ovens, grills, microwave ovens and any combination of these
IEC 60704-2-11 Particular requirements for electrically operated food preparation appliances
IEC 60704-2-13 Particular requirements for range hoods
IEC 60704-2-14 Particular requirements for refrigerators, frozen-food storage cabinets and food freezers
IEC/PAS 60704-2-15 Particular requirements for household food waste
IEC 60704-3 Procedure for determining and verifying declared noise emission values
Sound power measurement principles for household appliances

Semi-anechoic room
Special reverberant room
Reverberant room
And sound design

- Definition of a pleasant sound
- Identifying and reduction of annoying sound
- Application of Sone scale

Semi-anechoic room
Noise labelling of household appliances in Europe

~1970 Noise/energy labels in some counties of the European Community (voluntary)
1986 Directive of the Council of the European Communities on „airborne noise emitted by household appliances” (86/594/EEC)
1992 Directive of the Council of the European Communities on “the indication by labelling and standard product information of the consumption of energy and other resources by household appliances” (92/75/EEC)
≥ 1994 Product specific Directives of the Council of the European Communities (e.g. Refrigerators (94/2/EC))
2010 Directive of the European Parliament and of the Council on „the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products“ (2010/30/EU)

Product information on noise, since 1978

Example: Refrigerator / freezer

- Starting 1978
- ZVEI label, Germany

- 1994 – 2010
  - „old“ EU energy label

- Since 2010
  - „new“ EU energy label

Source: ZVEI, BSH
The icon

- Neutral loudspeaker symbol
- A-weighted sound power level re 1 pW
- No further explanation
- No classification
- No indication about noise level of market representative products

“The vast majority of respondents across all groups deemed the information ‘very useful’ or ‘useful’. Very few respondents were negative or responded ‘I don’t know’.”

EU energy label; sound power level to be declared
Other EU energy label

Windows (Draft)
Other EU energy label
A noise classification scheme for household appliances?

**Ideas**

- The PNR Icon
  - The PNR Scale
  - “Sound” Icons
  - The Big Black Arrow
  - The PNR Value
  - The Range-of-Levels
  - Information Box

Source: M. Nobile, 2011

→ No plan for a noise classification at the moment.

Source: EU labelling for tyres, (EU) No 1222/2009
dB value versus tiger?

66 dB versus
Contact

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Secretary of CENELEC/TC 59X Performance of household and similar electrical appliances
Member of CENELEC/TC 59X/WG 14 Measurement of noise emission
Member of IEC/TC 59/WG 2 Acoustical noise of household appliances
Annex

4.c Labels also provide information on other product-specific parameters. Please rate the overall usefulness of this information:

<table>
<thead>
<tr>
<th></th>
<th>Consumer</th>
<th>Ind. Retail</th>
<th>Ind. Manu</th>
<th>Totals</th>
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<td>5</td>
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<tr>
<td>Not useful at all</td>
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<td>1</td>
<td>1</td>
<td>2</td>
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<tr>
<td>Don't know</td>
<td>0</td>
<td>0</td>
<td>1</td>
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EU energy label - no noise to be declared

- Ovens
- Water heaters (incl. solar)
- TVs
- Lamps
- Luminaires