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## Bra ljudkomfort

för ögat, örat och själen



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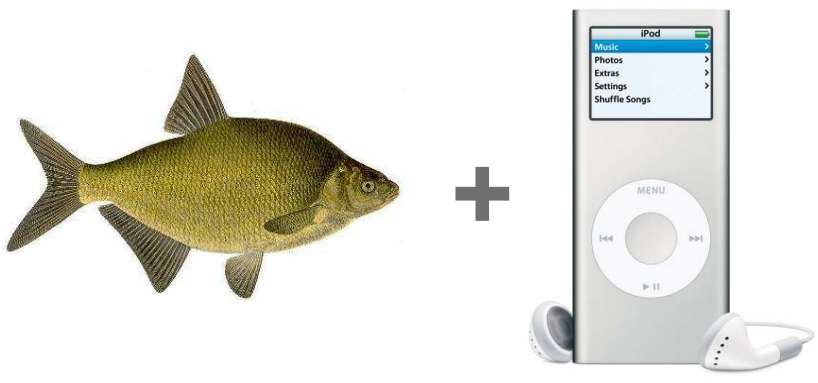
## Bra ljudkomfort

- Ljuden omkring oss
- Hur påverkas vi av ljud?
- Vad är ljud och vad kan vi göra åt ljuden?
- Hur definieras och skapas en bra ljudmiljö?

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## Ljud på menyn




The image shows a realistic illustration of a fish on the left and a silver iPod with white headphones on the right. A large black plus sign is positioned between them, suggesting a combination or relationship between the two.

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## Våra sinnen



A horizontal row of five close-up photographs representing human senses: lips, a hand, an ear, a nose, and an eye. Below the ear image, three speaker icons are arranged vertically, with sound waves emanating from them, indicating sound's effect on hearing.

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## Bra eller dåliga ljud?

Önskat ljud - **information**      Önskat ljud - **buller**

**Lyssnaren avgör**

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## Avbrott = tappar fokus och tid

- Lång tid att komma tillbaka
- Kalibrera och strukturera tankar
- Improduktivitet
- Stress

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## Ljudmiljön spelar roll



Arrows from the text labels point to the girl in the image:

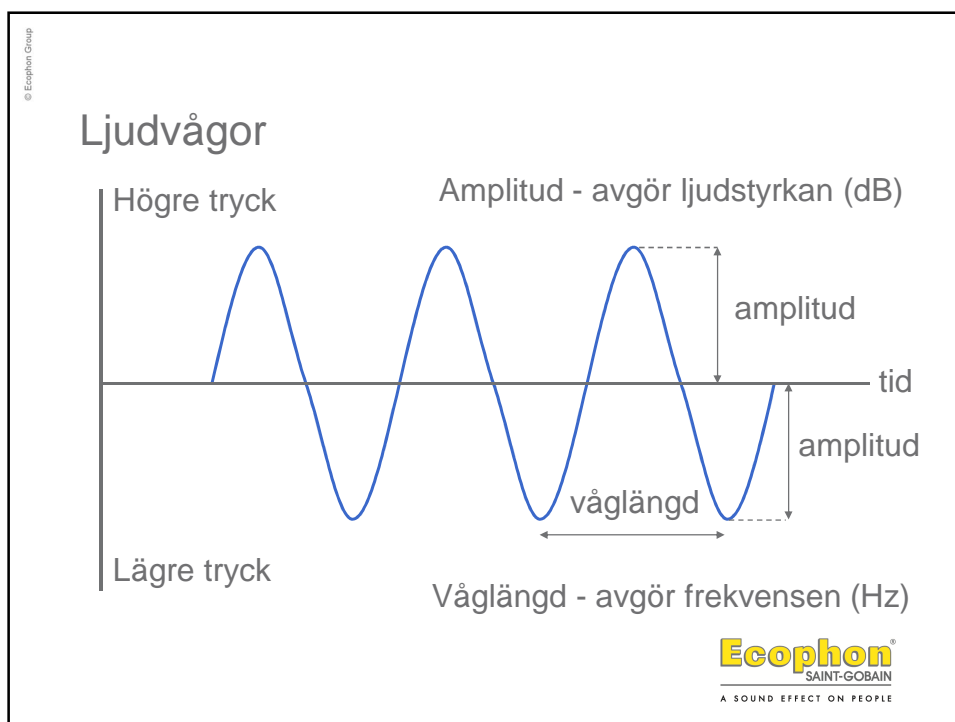
- Koncentrations-svårigheter
- Svårt uppfatta vad som sägs
- Stressande
- Sömnstörningar
- Hörselskada
- Ökat blodtryck, ökad hjärtfrekvens

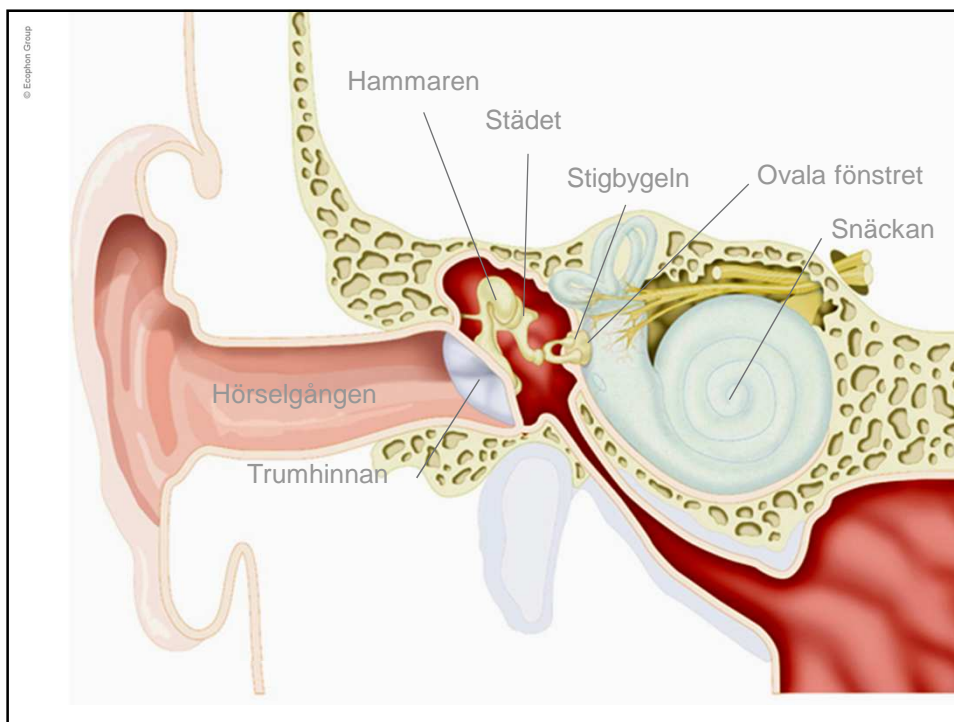
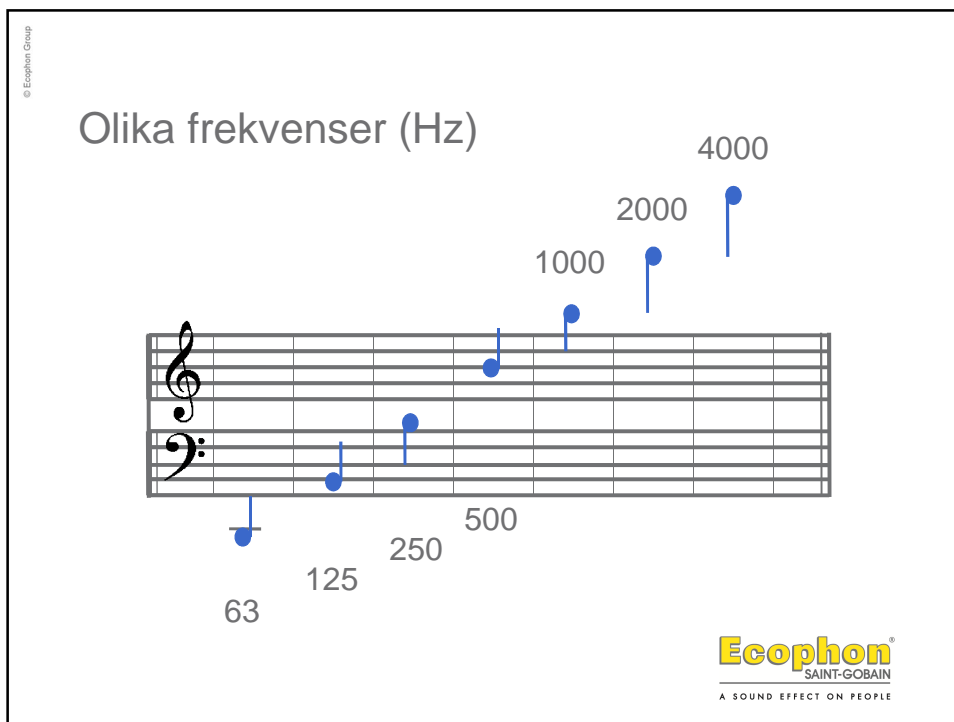
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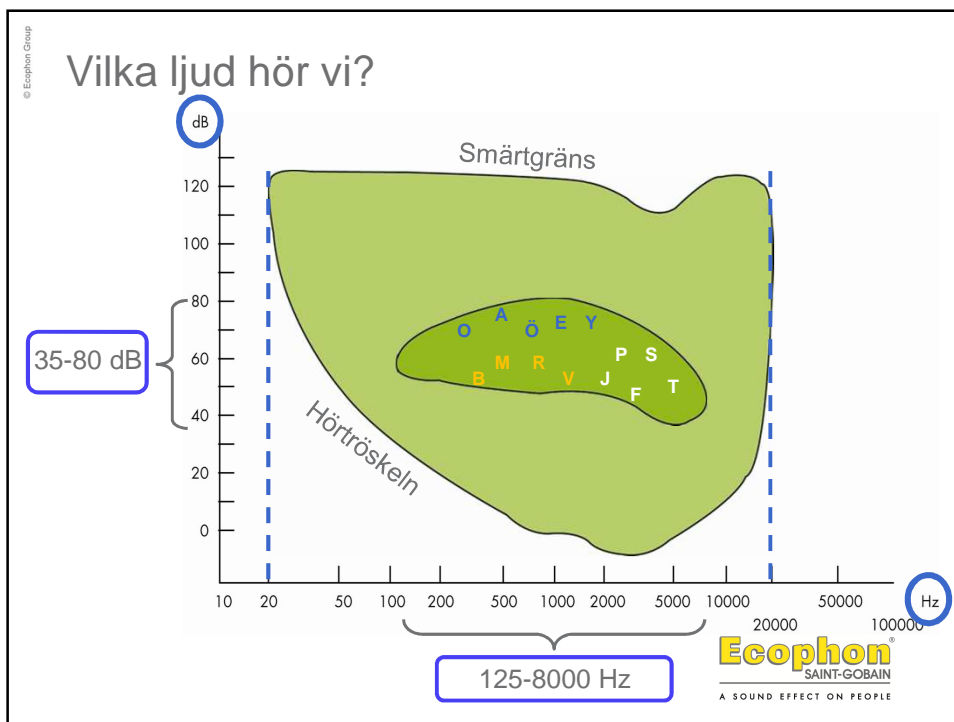
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## Ljud & våra öron

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## Bokstävernas betydelse

\_e\_ ä\_ i\_e \_ä\_ \_a\_ \_ö\_ \_å\_ \_a\_ \_o\_ \_ä\_e\_  
o\_ \_a\_ i\_e \_ö\_ \_o\_ o\_a \_e\_a.

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## Bokstävernas betydelse

\_e\_ ä\_ i\_e \_ä\_ \_a\_ \_ö\_ \_å\_ \_a\_ \_o\_ \_ä\_e\_  
o\_ \_a\_ i\_e \_ö\_ \_o\_ o\_a \_e\_a.

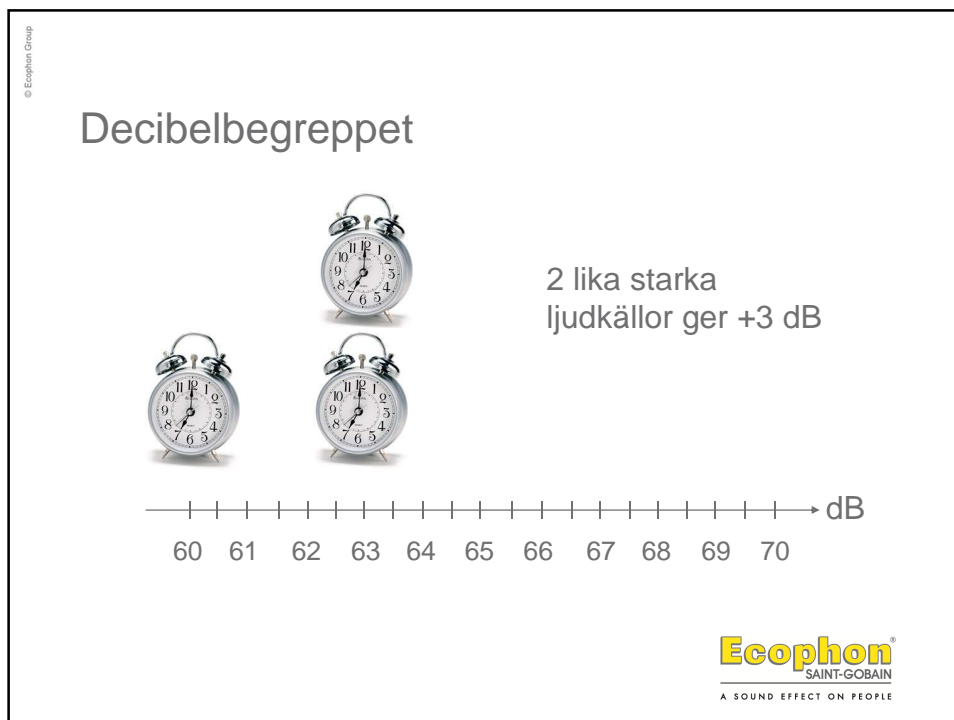
D\_t \_r \_nt\_ l\_tt \_tt frst\_ v\_d f\_lk s\_g\_r  
\_m m\_n \_nt\_ h\_r k\_ns\_n\_nt\_r\_n.

Vokalerna skapar talets ljudvolym

Konsonanterna bär informationen

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Ljud in  $\neq$  ljud ut



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## Önskemål på ljudmiljön

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## Olika ljudaspekter



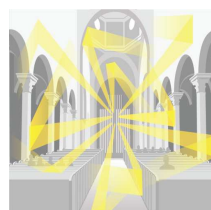
Ljudnivå



Tal-tydlighet



Ljud-utbredning



Klang



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## Vad är ljudabsorption?

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## Mäta absorptionsförmåga

Omvandlad

Reflekterad

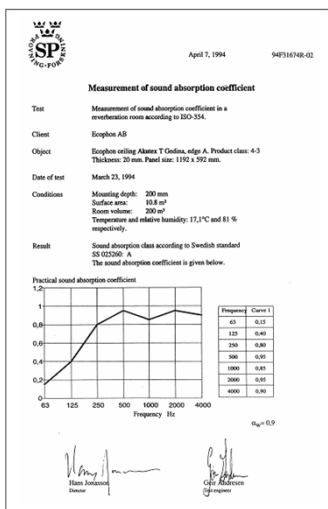
Infallande

Transmitterad

$\alpha = \frac{\text{omvandlad} + \text{transmitterad}}{\text{infallande}}$

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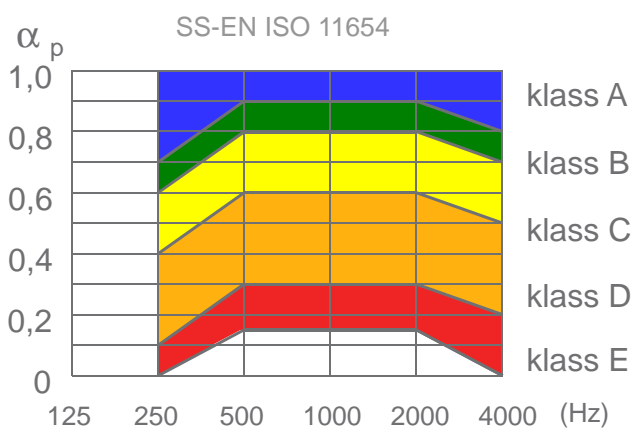
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## Klassificering av ljudabsorbenter



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