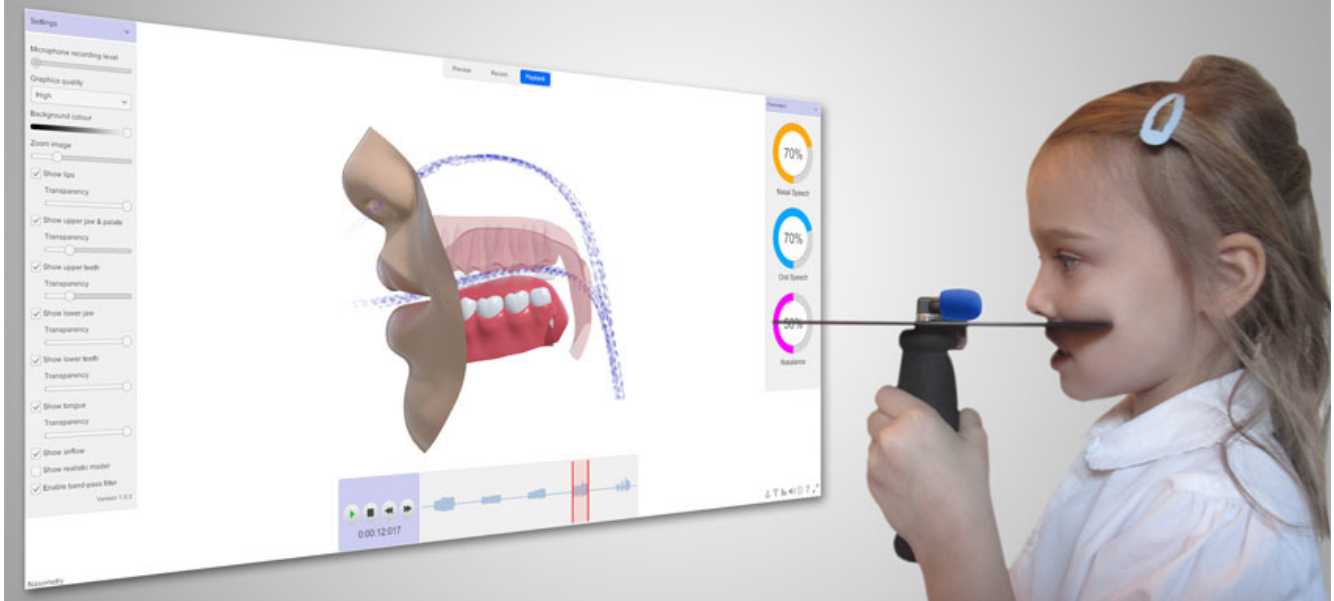# Nasality Microphone, portable nasometry system

Detects nasality during speech

The Nasality Microphone is a handheld nasometry unit that detects nasality during speech production. It uses a lightweight acoustic separator that is fitted with highly directional nasal and oral microphones. The portable design is quick and easy to assemble, and comes complete with a slimline carry case.
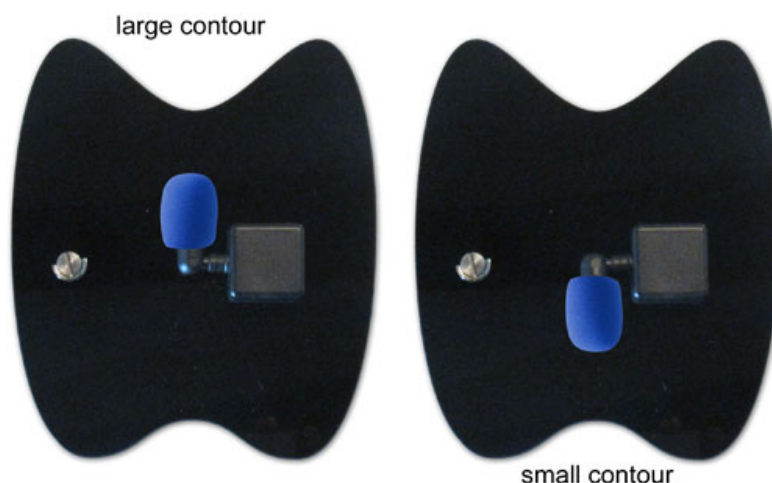
How nasometry works

The Nasality Microphone uses a special lightweight acoustic separator that is positioned above the upper lip. The acoustic separator is fitted with independent nasal and oral microphones.

Nasality is represented by a numerical value called nasalance, which is defined as the percentage of the total acoustic energy that is nasal. Nasalance, which is calculated for voiced sounds only, can be viewed in real-time for visual feedback, or recorded for off-line analysis.

$$nasalance = \frac{nasal\ acoustic\ energy}{nasal + oral\ acoustic\ energy} \times 100$$

Acoustic separation

It is important that there is a good seal between the face, just above the upper lip, and the acoustic separator. This prevents oral sounds being detected by the nasal microphone and vice versa. To ensure a good seal, the acoustic separator incorporates large and small facial contours. Simply rotate the nasal and oral microphones so they point to the side that best fits the contours of the face. The acoustic separator is also fitted with highly directional noise cancelling microphones, which further improve the acoustic separation.
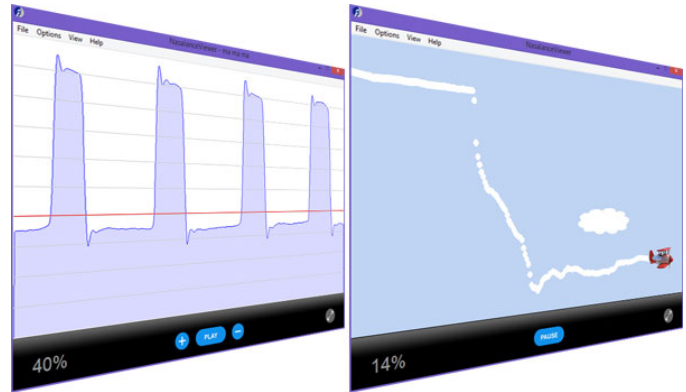

large contour

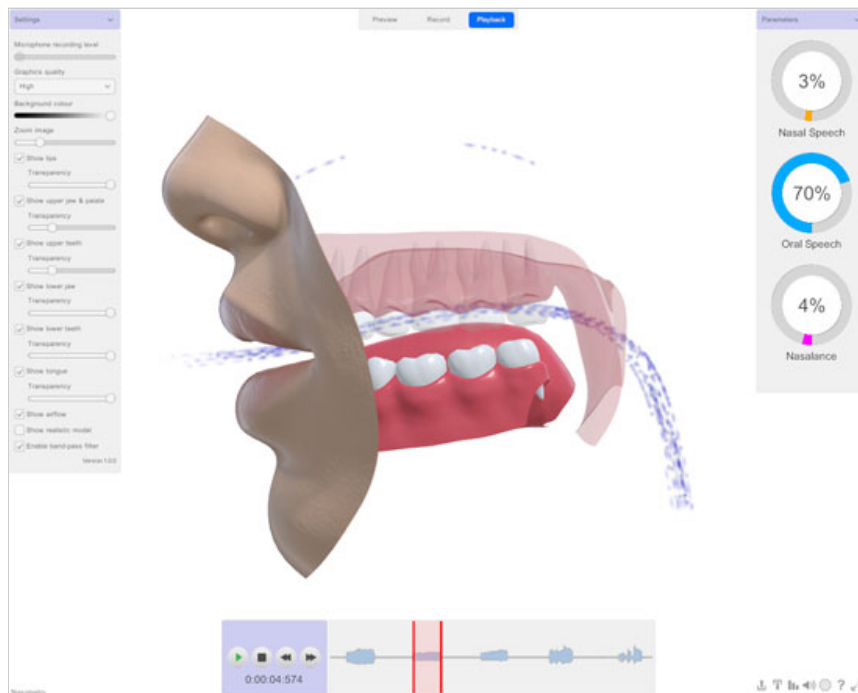small contour

Compatible software

NasalanceViewer

NasalanceViewer is easy-to-use Windows software that provides an ideal introduction to nasometry:

- Provides real-time visual feedback of nasalance
- Provides off-line objective analysis of nasalance
- Provides auditory playback of speech production
- Waveform display with adjustable target cursor
- Skywriter game with adjustable target cloud
- Simple to use interface, ideal for home use
- Windows 10, 8 and 7 compatible
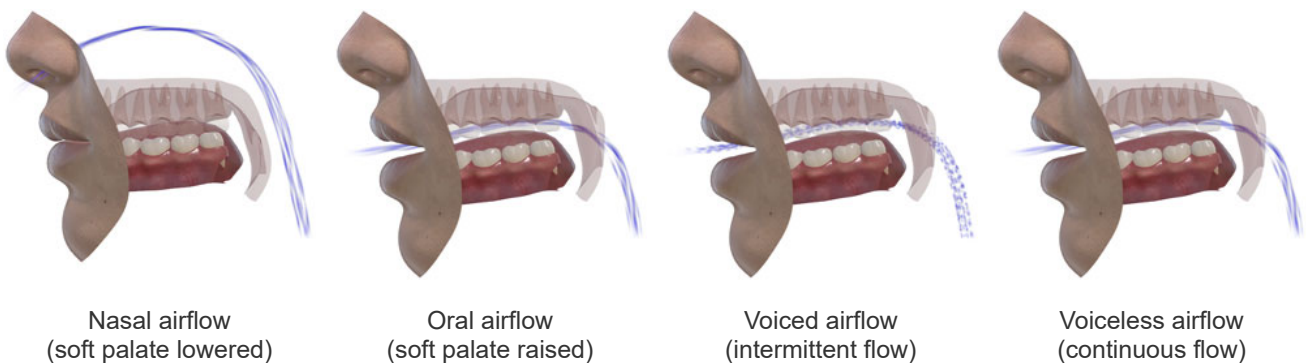- Desktop, laptop and tablet compatible

NasalanceViewer 3D

In addition to providing numerical displays of nasalance and nasal-oral speech, NasalanceViewer 3D uses state-of-the-art computer animation and 3D modelling techniques to approximate velopharyngeal closure and nasal-oral airflow.

The animated 3D model consists of the lips, teeth, tongue, lower jaw, hard palate, soft palate and uvula. The transparency of these articulators can be adjusted to reveal hidden structures, and the model can be rotated 360°. Airflow clearly illustrates the difference between nasal, oral, voiced and voiceless sounds.

Nasal airflow
(soft palate lowered)

Oral airflow
(soft palate raised)

Voiced airflow
(intermittent flow)
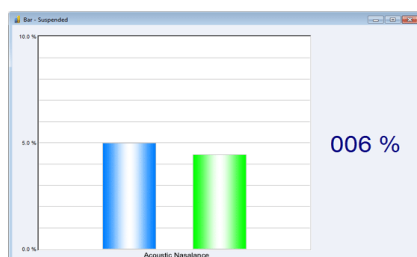
Voiceless airflow
(continuous flow)

Additional features include:

- Real-time visual feedback of nasalance
- Off-line objective analysis of nasalance
- Auditory playback of speech production
- Photorealistic and stylised views
- Windows 10 64-bit and 8 64-bit compatible
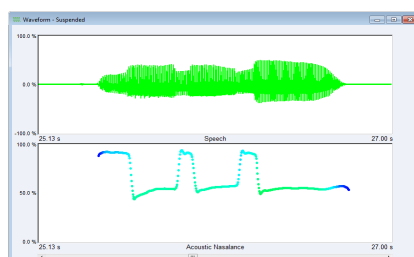
icSpeech Professional Edition

The Nasality Microphone is also compatible with icSpeech Professional Edition, which supports a wealth of additional features, including:

- Additional displays: bar, waveform, spectrogram and video
- Additional parameters: nasalance, pitch, timing, nasal and oral acoustic energy
- Six games with adjustable targets and rewards
- Extensive analysis features
- Data export facility
- Recorder with picture and word prompting
- Combines nasometry with EPG, airflow, voicing and video data
- Windows 10, 8, 7 and Vista compatible

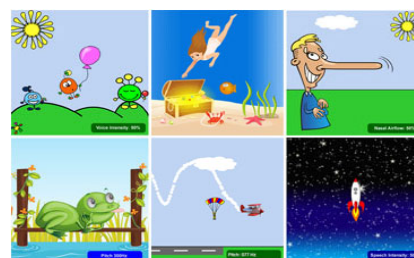| Bar display	Waveform display	Games

Bar display

The real-time Bar is a useful biofeedback tool that shows a simple bar, which moves upwards with increased nasalance. This allows the user to monitor nasality, make corrections, and instantly see the result.

Waveform display

The real-time Waveform display is often used in therapy because it allows the user to see the dynamics of their speech during the utterance of complete words or phrases.

Games

Each of the six interactive games feature adjustable targets, rewards and can be controlled with nasalance, pitch, nasal or oral acoustic energy.

What's included

- Nasality Microphone
- Carry case
- Four microphone windshields
- User manual
- 12 months guarantee
- NasalanceViewer (optional)
- NasalanceViewer 3D (optional)
- icSpeech Professional Edition (optional)