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Toothbrush Tester

Specification

3 parameters needed to be tested on a range of toothbrushes:

- a - stiffness of bristles according to ISO 8627: 1987/BS5757
- b - strength of a single bristle
- c - strength of a tuft of bristles

The equipment needed to be simple to operate for production staff, robust enough for a factory environment with extremes in temperature and offer the ability to perform all 3 tests with the minimum of 'set-up' time.

Solution

A VersaTest motorised test stand adapted with accessories and sensors was used to perform each test.

According to the ISO 8627 bristle stiffness test, the toothbrush has to be mounted in a holder and rubbed against a metal grid at a speed of 200mm/min. The grid is attached directly to a 100N S-beam loadcell which detects the stiffness of the bristles as they travel over it's surface. The graph of force/deflection was recorded using DataPlot-X software. Soft bristles will show a low force compared to hard bristles.

A surgical clamp with serrated jaws was used to hold the bristle for the 'single bristle' pull test. Forces in the region of 10 - 15N were required to remove the nylon bristle from the polypropylene toothbrush head.

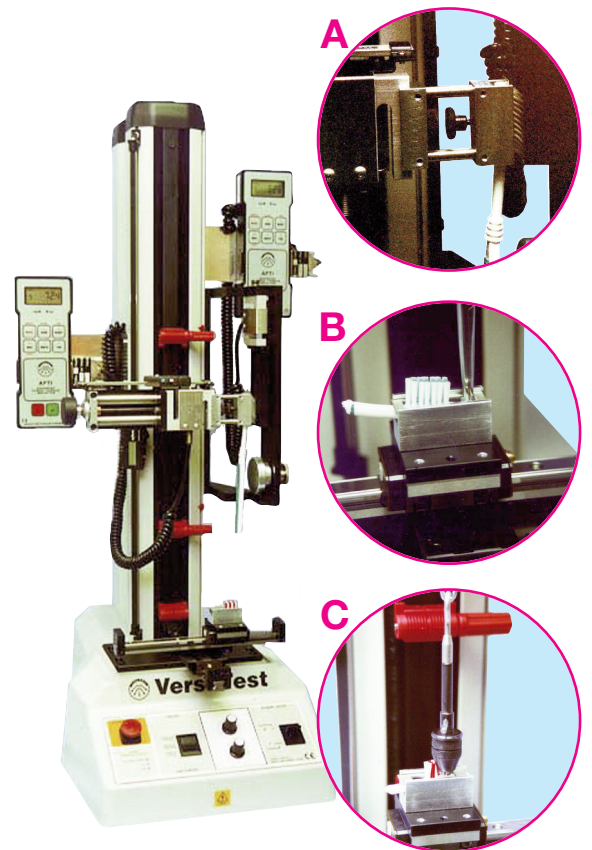
For the 'tuft' pull test, a set of bristles were held in a pin-chuck and connected to a 200N S-beam sensor via a flexible chain link. Removal forces for the complete tuft were in the region of 50 - 70N.

Supplied to

Westone Products, UK & China

System

- VersaTest Motorised Test Stand with Height Scale
- 2 AFTI displays
- 100N and 200N Smart S-beam
- Surgical Clamp and Chain
- Pin Chuck and Chain
- DataPlot-X Software
- X-Y table c/w Toothbrush head holder for above
- DigiCon Interface and Cables tests Bristle Stiffness Fixture (comprising grid/setting device)



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