

PROSCAN 2200 DENTAL

**PRECISE NON-CONTACT SURFACE MEASUREMENT
FOR DENTAL RESEARCH**

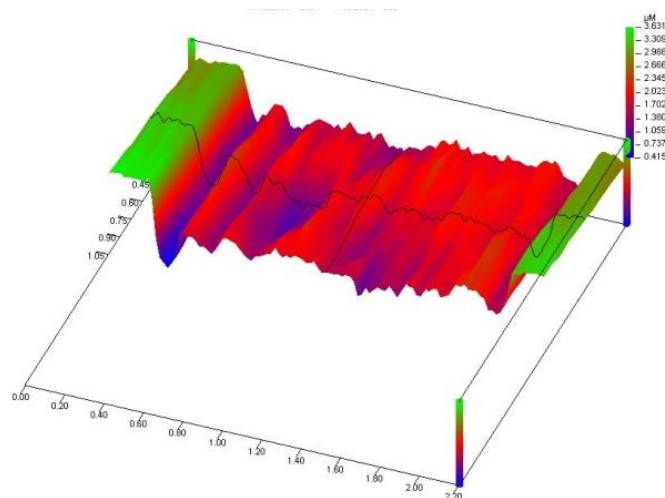


HIGH PERFORMANCE MEASUREMENT

The Proscan **2200 Dental** profilometer uses a patented chromatic confocal sensor. White light is transmitted through a lens with a precisely manufactured spectral aberration built in. It is this effect that takes the white light and divides it into the full spectral field, focusing each different colour frequency at a slightly different point through a defined measuring range. When an object is placed within this range, only one colour wavelength reflects from the surface. This information passes back into a processor where a spectrometer analyses the signal and converts it to a measurement. The Proscan **2200 Dental** combines these measurements with the precise location of a moving X and Y linear table, giving three co-ordinates from which a three-dimensional profile is created.

Chromatic sensor technology provides accurate non-contact measurement without the need for vertical scanning, even on mirror-polished, transparent, or soft materials. Detailed technical information on how this works is available on request.

The Proscan **2200 Dental** scans the surface of specimens over an area of up to 150x100mm at a rate of up to 1,000 measurements a second. A graphical 3D representation of the scanned data is shown on screen. Using surface analysis tools within the software, the specimen is accurately quantified according to roughness standards.



SCANTRON IS THE WORLD LEADER IN NON-CONTACT PRECISION MEASUREMENT FOR DENTAL RESEARCH

Laboratories and research organisations around the world choose the Proscan **2200 Dental** for pilot projects and clinical studies.

Being ultimately practical, Proscan **2200 Dental** suits many applications and replaces expensive instruments capable of just one specific task. The measurements you need are achieved quickly and inexpensively, by equipment proven to last for many years with minimum maintenance and calibration.

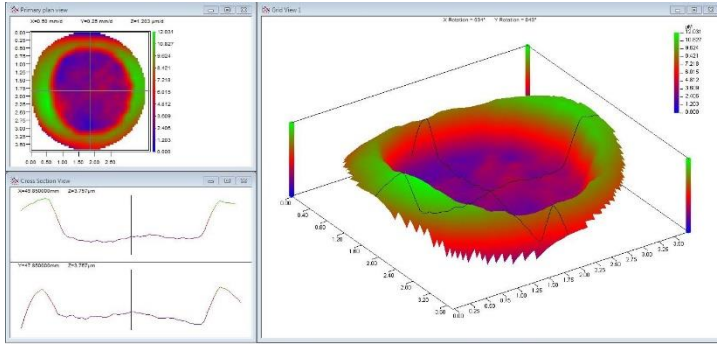
SENSOR SELECTION

Scantron recommends:

- S3/015 measurement of tubules
- S11/04 measurement of small specimens, such as enamel and dental composites
- S16/4 measuring erosion on individual tooth specimens
- S27/12 measuring multiple teeth or full arch

Sensor Model	Measuring Range	Stand-off Distance	Axial Resolution	Spot Size
S3/015	150µm	3.3mm	0.036µm	1.8µm
S11/04	400µm	10.8mm	0.12µm	4.0µm
S16/4	4mm	16.5mm	0.81µm	19.9µm
S27/12	12mm	26.6mm	2.22µm	24.3µm

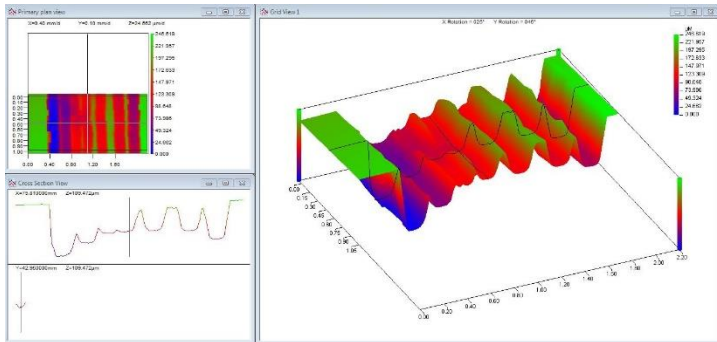
EROSION



Eroded Enamel

Proscan **2200 Dental** measures the direct effect of erosion on enamel and dentine by acid foods and drinks. Small specimens are mounted onto, or into, acrylic holders for in-vitro testing. The surface profiles are measured both before and after exposure to the erosive element. Once scanned, a datum profile is produced for each sample showing sufficient detail to identify the enamel rod structure. The difference between the two scans is qualified either as height deviations or as a volume measurement.

ABRASION

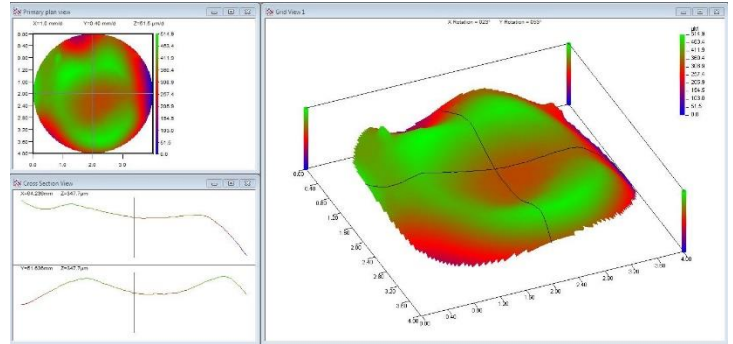


Brush Marks from Wear Rig on Dentine

Proscan **2200 Dental** is fast becoming the benchmark for enamel abrasion measurement. Favoured for its ease of use, the system easily captures the true surface profile of enamel both before and after abrasion testing.

Fast, accurate surface topography allows the user to qualify the exact amount of material abraded away, expressed either as height deviations or as a volume measurement.

ATTRITION



Attrition on Molar

The entire topography of occlusal, incisal, and proximal surfaces is captured through either in-situ modelling or in-vitro testing.

Accurate 3D measurement of the polished facets formed on the cusp tip, or the flattening of the incisal edge allows qualification of wear levels, especially where analysis over time is concerned.

SURFACE POROSITY

Sub-micron resolution allows measurements on the intercrystalline structure to be analysed. Studies into the effect of white-spot lesions reveal vital information.

SURFACE ROUGHNESS

Calculation	Mean Z	Ra	Rq	Count Z	Mean Y	Max Y	Count Y	Min Y
→ ISO An	7.84	6.47	7.92	89	1.04	6.46	7.85	49
→ ISO Pa	8.87	8.88	8.87	88	0.87	8.84	8.88	48
→ ISO Rz	1.68	1.82	2.05	88	2.20	1.44	4.38	43

Surface Roughness Measurements

Choose from a wide range of standard ISO and DIN surface roughness analysis tools to accurately determine the true surface texture of a material.

PROFORM SOFTWARE

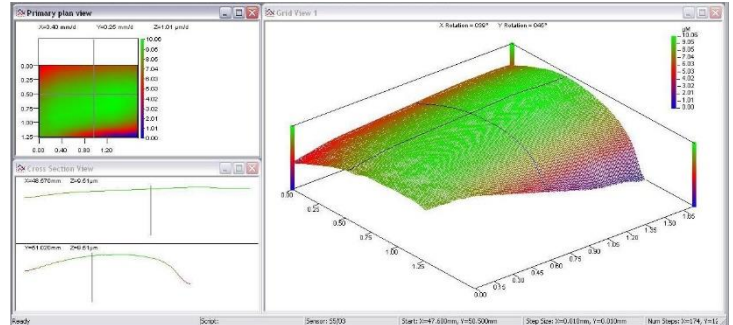
A very powerful analysis tool for identifying the difference between two samples by overlaying their scans.

ProForm by Scantron allows very accurate comparison of two scans. The precise difference can be expressed in volume, maximum height difference and mean height difference.

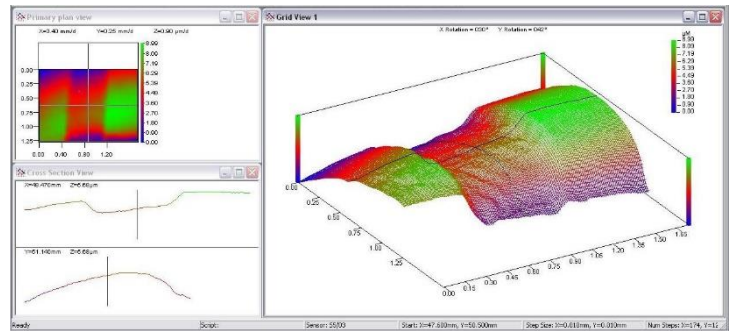
In the case of wear analysis **ProForm** interprets the exact amount of wear. A specimen is scanned, subjected to wear, and scanned again. **ProForm** compares the two scans, zooming in to the resolution of the scan to match distinguishing features.

Once a distinguishing feature is matched between the original and modified sample, this pivot point is fixed. Once fixed, the modified scan is rotated over the original to obtain the best fit. A three-dimensional view can be toggled to match the two scans and a two-dimensional cross-section in the X and Y axes is shown to assist very fine matching.

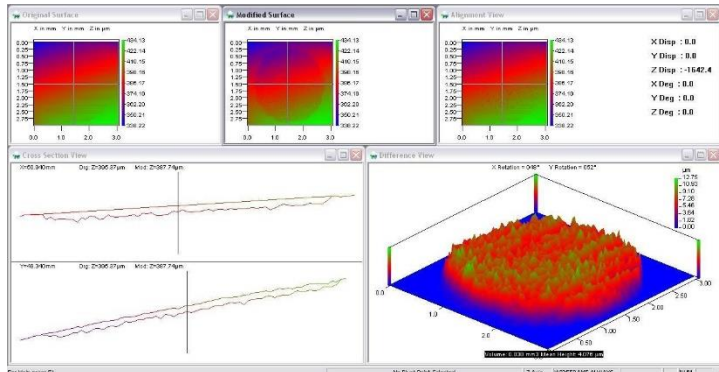
The software matches three selected areas of the mating surfaces automatically, displaying the accurate resultant difference as a three-dimensional image. **ProForm** includes the ability to manipulate scans manually, giving full control of the image in all three axes.



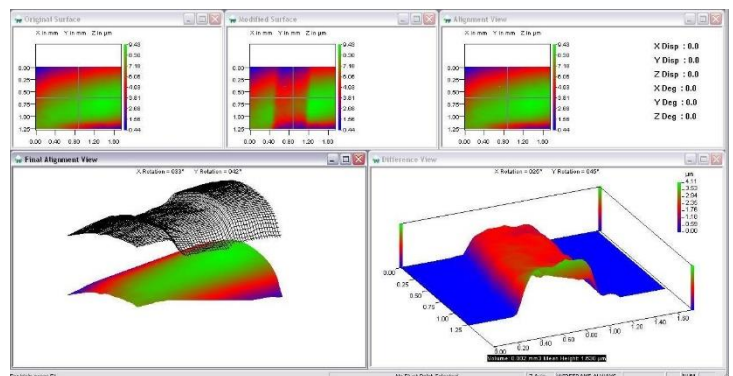
Enamel Surface Before Erosion Test



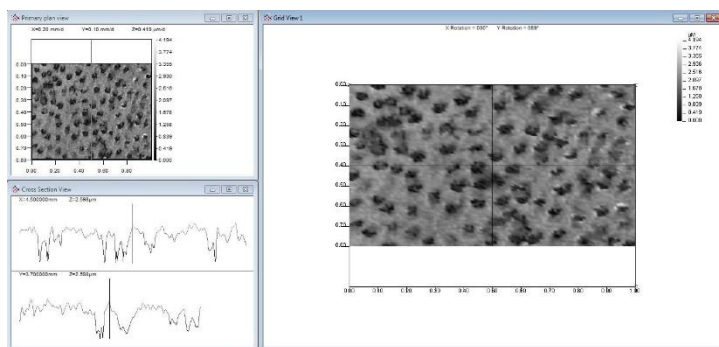
Enamel Surface After Erosion Test



Erosion from Acidic Drink on Enamel Shown as Volume and Maximum Height



Enamel Surface Comparison



Tubules in Dentine

SPECIFICATION

Scanner	
Dimensions (w×h×d)	1130×600×450mm
Weight	120kg
Travel	600-1200mm
Baseplate Dimensions	380 x 240mm
X and Y Travel	150 x 100mm
X and Y Step Size	100nm
Data Collection Rate	1kHz
Maximum Scanning Speed	80mm/s

SOFTWARE OVERVIEW

- Colour 2D, 3D, X & Y axis presentation
- Auto or manual scaling
- Selectable view orientations
- Matrix scanning – multiple scans on single components, or automatic scanning of multiple samples in a fixture
- Customisable scripts for easy processing of scan data
- Various filters including warpage, surface, and spike filters
- Measurement functionality includes cross section, surface area and volume
- Data export to multiple types (xyz, MATLAB, zzzz...)
- 2D X & Y plane visual fitting
- 3-point user defined plane correction

SURFACE FORM AND ANALYSIS

- Arithmetic Mean
- Ra – Average Roughness
- Rz (DIN) – Mean peak to valley height
- Rz (ISO) – Ten-point height
- Rmax – Maximum peak to valley height
- Rp – Mean peak height
- Rq – Root mean square average roughness
- Rqm – Maximum peak height
- Rvm – Maximum valley depth
- R3z – Mean third peak to valley height
- Wt – Total waviness depth
- Pt – Total profile depth
- Nr – Normalised peak count
- Tpa – Material ratio
- D – Peak density
- S – Mean peak profile spacing
- Sm – Mean peak local spacing
- Lm – Sample length
- Warpage filter removes surface roughness to leave form
- Surface filter removes surface form to leave roughness
- Point editing
- Interpolation
- Radius calculation
- Cross-section area calculation

PROSCAN SERIES

FIRST IN NON-CONTACT MEASUREMENT

2200



3D surface measurement

2D/3S



Surface roughness and flatness analysis

3D LINE



Defect detection and measurement



In-house design
& flexibility

DDMS



Automatic defect detection and measurement

MAGNUM



Surface and shape measurement system for sheet products

MASTERTRAK



Online thickness and width

Scantrol are specialists in non-contact inspection, detection, and measurement systems. Our capabilities include ...

- defect detection
- displacement
- flatness
- shape
- surface roughness
- thickness
- diameter
- distance
- length
- straightness
- speed
- width

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