NANOWATTS

RDA ISO 11609

Toothpaste Abrasivity Test



TOOTHPASTE RDA TESTING IN A GLIMPSE

Toothpaste abrasivity testing evaluates the extent of dentin surface wear associated with brushing. Our laboratory assesses surface changes using quantitative profilometry techniques to characterize the abrasive performance of toothpaste formulations under controlled testing conditions.

REFERENCE-BASED PERFORMANCE EVALUATION

A laboratory reference abrasive provides a comparative benchmark for evaluating test formulations. Results are normalized against the corresponding reference measurements, enabling relative dentin abrasivity to be assessed across the selected test conditions.



QUANTITATIVE RDA ASSESSMENT

Relative dentin abrasivity is determined from comparative wear measurements against the laboratory reference. Independent measurement datasets are evaluated and combined to provide a representative RDA result for each tested condition.



DUAL MEASUREMENT METHODS

Test formulations and reference materials are evaluated under defined laboratory conditions. Comparative measurements help characterize differences in abrasive performance while maintaining consistency within the study design.



CONTROLLED BRUSHING CONDITIONS

The Active Toothpaste and Reference were evaluated brushing strokes using a controlled brushing apparatus. Specimens were subjected to the specified brushing sequence before post-test surface measurements. Using defined stroke conditions supports a structured comparison of relative wear.

COMPARATIVE RDA EVALUATION

RDA results express the relative wear of a toothpaste formulation compared with the assigned reference value. Results above or below the reference indicate greater or lower measured relative abrasivity, respectively, under the evaluated conditions.
The findings support comparative formulation assessment and help characterize differences in abrasive behaviour.

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TOOTHPASTE

PERFORMANCE ELEMENTS

RDA OUTCOME SNAPSHOT

RELATIVE DENTIN ABRASIVITY EVALUATION

NANOWATTS

Enamel Wear Calculation

Formulation	Strokes	Contact 2D Wear RDA	Laser 3D Wear RDA	Average RDA
Active Toothpaste	4000	207.5	183.6	195.5
Active Toothpaste	8000	194.8	192.9	193.9
Calcium Pyrophosphate Ref	4000	100	100	100
Calcium Pyrophosphate Ref	8000	100	100	100

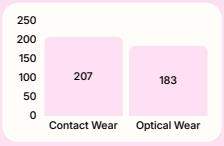
BRUSHING STROKES

4000

RDA SCORE

195

RDA Wear Scores



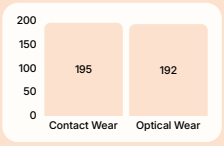
Brushing Strokes

8000

RDA SCORE

193

RDA Wear Scores



We WEAR DATA 07

Contact Wear (um):

We measure dentin wear depth after brushing to quantify the material removed from the test surface.

Cl CLASSIFICATION 08

ABRASIVITY SCALE
(0 – 250 - UP)

We measure dentin wear depth after brushing to quantify the material removed from the test surface.

Ob OBSERVATION 09

We compare wear measurements across test conditions to identify differences in abrasive performance between the Active Toothpaste and Reference.

Co CONCLUSION 10

We summarize the RDA findings to provide a clear assessment of the formulation's relative dentin abrasivity under the tested condition

Nt NOTES 11

- RDA values are calculated relative to the Calcium Pyrophosphate reference at the corresponding brushing condition.
- Classification represents the laboratory reporting framework used in this study and is not an official ISO 11609 classification.
- For whitening toothpaste formulations, a comparatively higher RDA may be associated with increased mechanical stain-removal and polishing action. RDA alone does not establish whitening efficacy.
- Whitening performance should be evaluated separately using an appropriate stain-removal or whitening efficacy test.



DENTIN SUBSTRATES

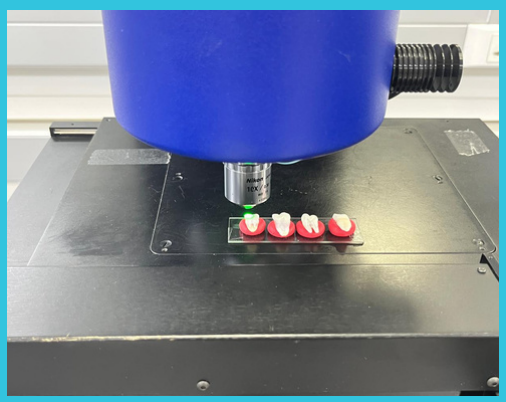
We can arrange the collection of extracted human teeth and perform the testing directly on natural human dentin to provide more clinically relevant results.

SURFACE PROFILOMETRY AND VISUALIZATION

Our laboratory combines contact-based and non-contact optical surface characterization to support comparative dentin wear assessment. Using complementary techniques provides additional information for reviewing measurement agreement and interpreting surface changes.

WEAR CHARACTERIZATION

Testing can be performed using natural human dentin specimens. Specimen sourcing and availability can be discussed during study planning, subject to applicable ethical, regulatory and laboratory requirements.



SURFACE PROFILOMETRY AND VISUALIZATION

Surface characterization outputs provide visual and quantitative information about dentin topography. Contact profiles and three-dimensional surface maps can help illustrate surface-height variation and complement numerical wear measurements. Representative images and surface analysis outputs may be incorporated into the final technical report.

