

Surface Finish

Steve Suffoletto

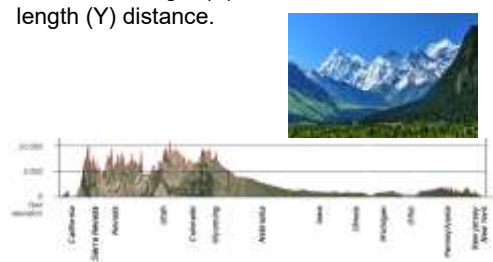
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Topography

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- Land surface Topography is the description of the vertical height (X) variation over a horizontal length (Y) distance.



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Printing Applications

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- In lithographic printing, we may want a certain surface finish or texture to be either smooth or rough or a combination of both, somewhere in between.
- Plate Grain
- Blanket Release
- Paper Gloss
- Coating Slipperiness


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Friction

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- Surface finish effects friction (heat) and wear (abrasion) and fluid lubrication (adhesion).
- Packaging coatings Coefficient of Friction (CoF)
- Slip angle
- Tactile touch feeling
 - Slipperiness
 - Soft-touch, Soft-Feel coating



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Smoothness vs Cost

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- In general terms, the smoother you want a surface to be, the more expensive it will be to purchase or create because of the cost of additional materials or processing steps (time, labor).
- Paper:
 - Cast coater
 - Super Calendered


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Profilometer

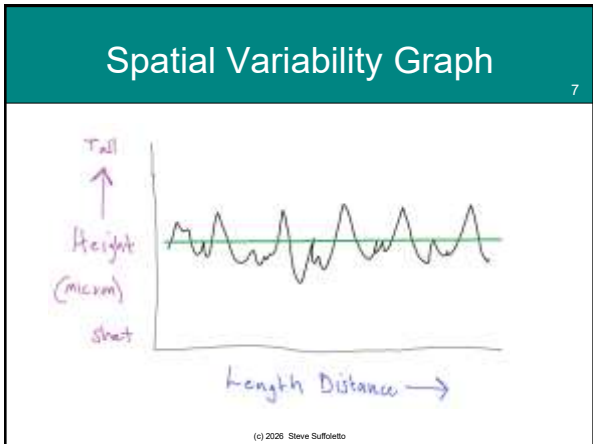
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- Instrument to measure (quantify) surface finish with a "Ra" metric, in microns (um).
- Mechanical contact with diamond tip stylus
- Cost ~\$700-\$3,000
- Electronic with optical or laser
- Provides surface profile graph (Topography)



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Phonograph

- A diamond tip stylus (needle) traces mechanical pattern in a continuous groove in a vinyl record. The vibrations get converted into electrical signal then into audio sound through a speaker.

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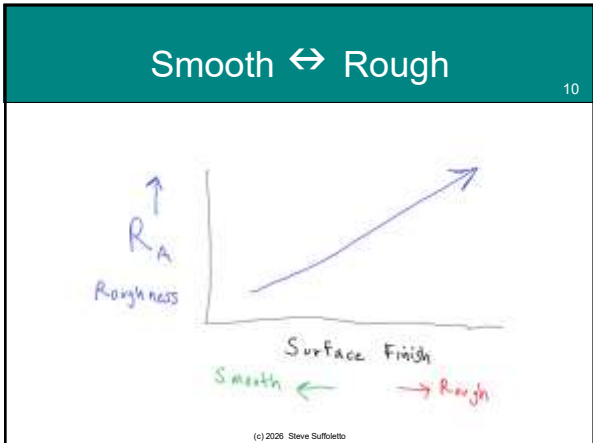
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R_A = Roughness Average

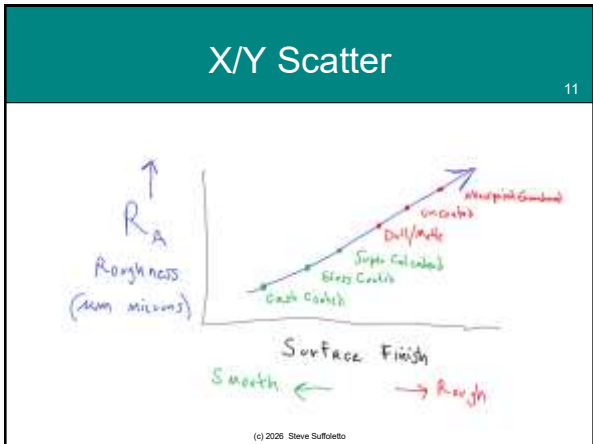
- R_A is often included in Geometric Dimensions & Tolerances (GD&T) specifications for engineering drawing with blueprints with Computer Aided Design (CAD) and Computer Numerical Control (CNC) machines.
- R is the abbreviation for **R**oughness.
- R_A is the **A**verage peak to valley height
- R_V is maximum **V**alley depth
- R_P is maximum **P**eak height
- R_Z is the maximum peak to valley height

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R_A of Materials

- Glass mirror ~0.02-.06 um
- Offset Blanket ~ 1.0um
- Uncoated paper
- Matte paper
- Gloss coated paper
- Varnish
- Aqueous (AQ) Water-based coating
- UV coating
- Film lamination

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- 50 years of diverse practical experience in printing industry.
- Held positions in both production and management, from small to large printers, in commercial, packaging, and publication sectors.
- 15 years at Rochester Institute of Technology (R.I.T.)
- 15 years at Erie Community College, Buffalo, NY.



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