**ProTaper Universal®**

**Company:**
Dentsply Tulsa Dental

**Manufacturer:**
Dentsply Tulsa Dental

**Made In:**
USA

**Website:**
TulsaDentalSpecialties.com

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**Tip Evaluation**

1st 3mm

- **Size:** S2
- **Flutes:** 3 (convex)
- **Spirals per 16mm:** 3
- **Helix Angle:** 20°
- **Cutting Angle:** (-) 31°
- **Debris Removing Area:** 35.8%
- **X-SEC. AS % OF CUTTING DIA.:** 54%
- **Core AS % OF X-SEC. Area:** 83%
- **Rotation To Failure:** 358°
- **Peak Torque At Failure:** 11 gf/cm
- **60° Deflection:** 1.42 g
- **Plastic Deformation:** 0°

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**Discussion:**

- The resistance to torsional failure was relatively high compared to triangular x-sections. This is due to the greater x-sectional area of convex flutes. The cutting angle is less aggressive and requires greater torsion during performance.

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SEMs are provided by Dr. Franklin Garcia-Godoy, Professor and Senior Executive Associate Dean for Research Director, Bioscience Research Center University of Tennessee Health Science Center