Soft coils are typically viewed as the best design for filling and finishing the aneurysms to achieve a higher packing density and are hypothesized to exert a lower force against the aneurysm wall during deployment. Zhao et al. reported an in vitro pliability test method to assess clinically relevant coil softness and compare these metrics for two commercially available framing and finishing coil products.

A force measurement sensor was affixed onto a side-wall synthetic aneurysm model to continuously measure forces on the aneurysm wall during coil deployment at a fixed delivery rate. A quantitative overall energy metric (average work number or AWN) was calculated from the force-displacement graph representing coil delivery into the aneurysm. Two groups of coils were evaluated: (a) finish coil group (N = 20 ea.): Axium™ Prime Extra Soft coil (ES) and Target™ 360 Nano coil (Nano), and (b) frame coil group (N = 20 ea.): Axium™ Prime FC coil (FC) and Target™ 360 Standard coil (Standard).

(a) In the finish coil group, AWN was measured as: ES (0.53 ± 0.09 gf-cm) and Nano (0.99 ± 0.21 gf-cm). (b) In the frame coil group, AWN was measured as FC (2.54 ± 0.53 gf-cm) and Standard (4.48 ± 0.52 gf-cm). In both groups, Axium Prime coils had statistically lower measures of AWN and therefore higher pliability compared to Target coils ($p < .001$).

The in-vitro pliability test method offers quantitative metrics to assess coil softness during deployment in a clinically relevant aneurysm model [1].

1)
Zhao R, Liu J, McComas S, Guo J, Girdhar G. In-vitro pliability assessment of embolization coils for intracranial aneurysm treatment. J Neurol Sci. 2019 Aug 22;406:116432. doi: 10.1016/j.jns.2019.116432. [Epub ahead of print] PubMed PMID: 31629992.