

Metals Engineering and Testing Laboratories (Phoenix, Arizona) AND CompareLabs (Yonkers, New York)

Background:

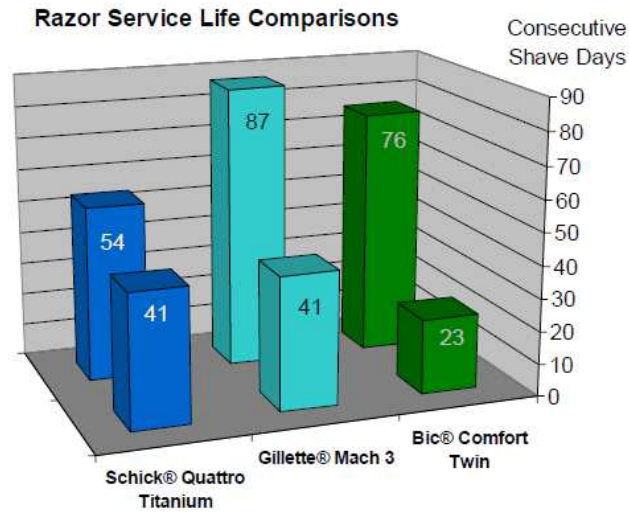
Tests performed at CompareLab on these three sets of blades revealed an increase in the life of the blade when stored in the MAGNA BLADE unit. These three sets of two blades, one stored in the MAGNA BLADE and the other was not, were submitted to METL for a comparative analysis. METL was contracted to analyze these blades for metallurgical comparison and to investigate possible reasons for the observed increased life when stored in this MAGNA BLADE unit. This MAGNA BLADE unit is comprised of two adjacent magnets where the two south poles are on the outer left and right of the unit. There is no rotational skew of these magnets and the polymer housing is approximately 2 mm in thickness between the magnets and the stored razor.

Conclusion:

The leading causes of razor blade degradation are rounding of the cutting edge and corrosion. Examination of the cutting edges of the six blades revealed similar geometries which revealed the extent of rounding to be similar between razors. Also, results of the hardness analysis revealed similar magnitudes. These two facts revealed the MAGNA BLADE to have no effect on blade longevity from a dulling occurrence. These findings suggest the observed increased life of the blades to be associated with the affect of the MAGNA BLADE unit to decrease the corrosion rate of the blades.

The suggested idea that the MAGNA BLADE unit increases the life expectancy of razor blades due to the applied magnetic field lead to investigation of this phenomenon. From a materials view, corrosion of iron based alloys is due to the free iron at the surface being drawn away from the base alloy due to the relatively low bonding energy. It is thought that the bonding energy of these free iron atoms to the base alloy in some way increases. If this increased bonding energy to the base alloy in the presence of a magnetic field in a certain orientations is occurring, then it is expected that the corrosion rate would be decreased.

Conclusions:



Razor	Consecutive Shave Days		% Improvement w/ MagnaBlade
	Conventionally Stored	Stored using MagnaBlade	
Schick® Quattro Titanium	41	54 ⁴	32%
Gillette® Mach 3	41	87 ⁵	112%
Bic® Comfort Twin	23	76	230%

As represented in the above table and chart, when used as directed, the pre-production version of MagnaBlade increased the effective service life of razors from 112% to 230% over that of conventionally stored razors.⁶

⁴ The Schick Quattro razors were tested with an experimental MagnaBlade razor storage device that had a differing magnetic field than that of the prototype, pre-production MagnaBlade.

⁵ Test stopped. At the test conclusion, this Mach 3 razor had not yet reached its end-of-service-life.

⁶ Under controlled conditions.