

# Proving Platinum's Superior Wear Resistance

## Beliefs & Assumptions

**Common Assumption:** Metal Hardness = Wear Resistance

It's assumed that gold alloys are harder so they're more resistant.

**FACT:** Not necessarily - especially when it comes to platinum alloys.

**Long-held Belief** (based on anecdotal evidence):

Platinum jewelry outlasts gold when subject to human wear.

Platinum is the most secure setting for diamonds & gemstones.



## Our Mission

Get scientific proof that **platinum jewelry is more wear resistant than gold**. Conduct comprehensive tests in an independent laboratory to replicate human wear conditions over time and report results.

## Scientific Testing

An independent laboratory conducted the following comprehensive tests:

**1 Scratch testing:** Scratch gold and platinum alloy samples with a diamond tip to discover the following:

*Do scratches cause "micro-cutting" or "micro-ploughing"?*

\*Micro-cutting – results in metal loss

\*Micro-ploughing – results in metal displacement

(the metal moves around on the surface rather than wearing away)

**2 Corrosion Testing:** Apply artificial human sweat (eww!) to gold and platinum alloys and then heat them in an enclosed chamber to discover the following:

*Does exposure to the elements lead to corrosion?*

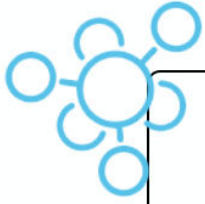
*Does that contribute to wear?*

**3 Wear Testing:** Suspend gold and platinum alloys on a nylon cord in a rotating drum and toss with sand/stone/nutshells to discover the following:

*How much "mass loss" and "volume loss" occurs?*

Results on the back of this page

# Laboratory Test Results

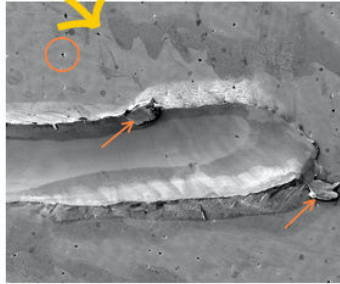


## Gold Alloys

### Scratch Test:

“Micro-cutting” occurs on the surface causing metal loss.

*Gold Alloys:*  
Example of micro-cutting occurring during the scratch test.

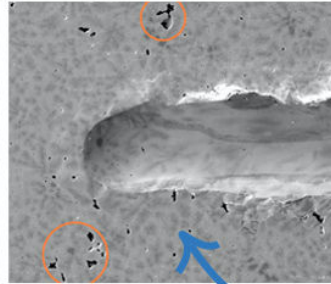


## Platinum Alloys

### Scratch Test:

“Micro-ploughing” occurs on the surface, causing metal to move around on the surface, rather than wearing away.

*Platinum Alloys:*  
Example of micro-ploughing occurring during the scratch test.



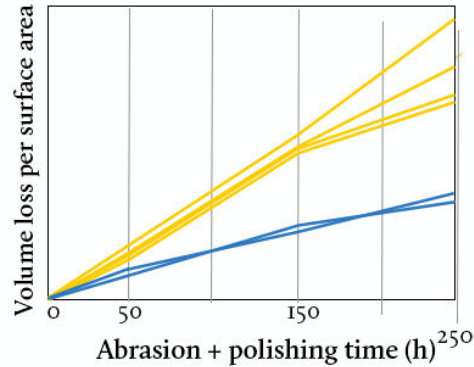
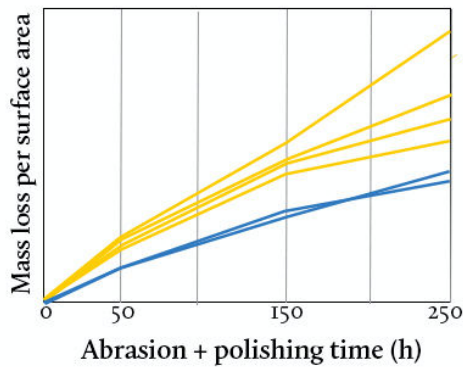
### Corrosion Test:

Clear, visible corrosion occurred on 14 kt. nickel white gold alloy sample

### Corrosion Test:

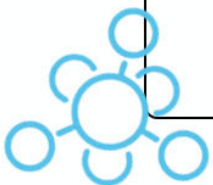
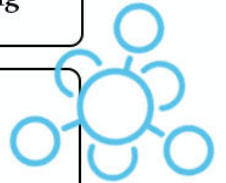
No visible change in platinum alloy samples following corrosion testing

## Wear Test



■ Gold Alloys

■ Platinum Alloys



## Conclusion

1. Significant differences in mass and volume loss between the platinum and gold alloys were observed through a series of iterative wear tests.
2. The volume loss of both of the 950 platinum alloys tested is a factor of 2-3 times lower than the gold alloys.
3. Notably, these results align with the abundant anecdotal evidence claiming that platinum jewelry items tend to outlast their gold counterparts and platinum prongs are the most secure setting for diamonds & gemstones.

Scan to read the full research report published in the Johnson Matthey Technology Review:

