

# Care and Feeding of Your Rosetta Disk

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## **Congratulations, Rosetta Disk Owner!**

You are now the caretaker of an archive of 1,500 human languages, carefully crafted to last for millennia. This disk that fits in the palm of your hand contains over 13,000 microscopically etched pages documenting human experience and intellect as expressed in our myriad languages – languages that are themselves a record of thousands of years of human interaction with our surrounding environments and with each other. The Rosetta Disk is also an artifact for the future – an intentional Rosetta Stone – that could serve as a key to deciphering the written records our civilizations leave behind.

## **Materials and Assembly**

The Rosetta Disk is housed in a sphere made of a stainless steel base and a glass dome. The two parts are held together by a circular band, with screw threads on the inside of the band. Turn counter-clockwise to loosen, and the reverse to tighten. The trick to threading is to carefully center the glass hemisphere so the ring can reach the threads, then rest the metal circle at the top of the threads, and to turn it counter-clockwise applying little to no pressure. Be careful not to tilt the sphere at this point as the glass dome can slide off. Once you feel the circle seat in the threads, try tightening by turning clockwise. If it is seated properly, it will screw down easily. If not, do not force it (this can damage the threads), but try the reseating process again until it seats correctly.

The Rosetta Disk rests in a machined depression inside of the stainless hemispherical base. Beneath the disk, we have included a coiled stainless strip and small metal stylus. You can use this stylus to engrave the metal strip in any way you choose -- this engraving can then become an archival record that accompanies the Disk as you pass it down to your family, and to history.

## **Reading the Disk with a Microscope**

To read the disk, you will need a front lit microscope, like the ones designed for metallurgy. This is different from the more familiar kind that shines light through a specimen slide -- the metallurgical microscope is made to observe solid materials, and the light shines on the material from above. To read the archive side, you will need a 650x microscope. One with features that allow you move the disk back and forth on a platform, and to adjust brightness and contrast is also helpful.

When you place the disk on the microscope platform, start at about 250x, and individual pages should be small but clearly visible. Remember to place the disk on the microscope platform upside down from your viewing perspective, since the microscope rotates the image you see 180 degrees. Use the lower level magnification to focus before zooming in for close up magnification, and watch that the platform does not raise too high, or the lens

could accidentally scratch or dent the surface of the disk. When you get the image in focus, it may help to adjust the brightness to get the clearest image.

When you focus you should be able to see and read the text as clearly as you would from print in a book. The text that you see is actually shadows, since the etching and plating process raises the readable text very slightly -- about 100 nm -- off the surface of the nickel disk.

If you purchase a trinocular microscope, you will be able to mount a camera for still pictures or a video display of the disk.

Here are specs for the microscope that we bought:

Body	Trinocular Head inclined at 45-degrees.
Nosepiece	Quadruple revolving nosepiece with accurate centering and positive click stops
Stage	Large Low co-axial Mechanical Stage for X-Y movement of specimens upto thickness of 65 mm.
Illumination	Brightfield vertical illuminator 6V-20W Halogen with aperture diaphragm, filter slots and bulb centring mechanism.
Objectives	Semi-Plan DIN M4X, M10X M40X M100XOIL .
Eyepieces	WF10X/18mm & 15X
Focussing	Coaxial Coarse and Fine Precision Focussing
Accessories	Styrofoam Box, CoveR, Fuse, Bulb, Cleaning cloth, Manual

### Contents of the Rosetta Disk

The micro-etched Rosetta Disk has two sides. One side, meant to be a guide to the contents of the disk, and is etched with a central image of the earth and a message written in eight major world languages (Arabic, English, Hindi, Indonesian, Mandarin, Russian, Spanish and Swahili): "Languages of the World: This is an archive of over 1,500 human languages assembled in the year 02008 C.E. Magnify 1,000 times to find over 13,000 pages of language documentation." The text begins at eye-readable scale and spirals down to microscopic scale. This tapered ring of languages is intended to maximize the number of people that will be able to read something immediately upon picking up the Disk, as well as implying the directions for using it—'get a magnifier and there is more.' Between the spiral text and the globe graphic are columns of text that include an index listing the 1,500 languages that have data on the reverse side of the disk. These are arranged alphabetically by geographic region.

On the reverse side of the disk from the globe graphic are over 13,000 microetched pages of language documentation. Each page is .019 inches, or half a millimeter, across. This is about equal in width to 5 human hairs, and can be read with a 650X microscope (individual pages are clearly visible with 100X magnification). The pages are arranged by geographic region, country and alphabetically by language name. The bottom 20% of the disk is filled with lists of vocabulary for the languages on the disk.

An easy way to show people the contents of the disk is to use the enclosed DVD, which allows you to browse both sides of the disk, and zoom all the way down to view the microscopic content.

## **Cleaning**

Your Disk will no doubt acquire some dirt and grunge over its estimated multi-millennial lifespan. Should this happen while it is under your care, you may choose leave it or clean it as your aesthetic muse moves you, or leave this task to future generations.

To clean the stainless base of the sphere and the screw thread, use a mildly abrasive stainless steel cleaner and gently rub any spots or stains with a dampened paper towel. Rinse with water. The glass dome can be cleaned with a regular glass cleaner. Let all the parts dry before re-assembling. The stand is made of walnut wood, and can be cleaned and shined with any wood polish.

To clean the data side of the Rosetta Disk, which is made of nickel, you can use a solution of deionized water and denatured alcohol (even 100% denatured alcohol is fine if the solution doesn't work). Dry the disk with a spray can of dust-free air. If this still doesn't remove bits of recalcitrant eye-visible goo, you can rub the disk – very, very gently – with a microfiber cloth, and that should do the trick.

The human eye readable side of the Rosetta Disk (with spiraling text) is made of commercially pure titanium with a black oxide coating. When you receive the disk, the text will be white on a dark background. The whiteness of the text is actually brighter than titanium, and is caused by sputter from the laser that etched it. You can choose to leave this residue, which makes for a more striking eye-visible contrast when the disk is displayed inside the sphere. The white residue will, however, obscure the smallest text if you plan to look at it under a microscope. For the clearest image under magnification, you can wash away this residue by soaking the disk for a few minutes in a bath of deionized water, and then gently rubbing the residue away with a microfiber cloth. The residue will not reappear, so this decision to clean the disk will permanently affect the appearance of your disk. The disk will still look very good in the sphere, there will just be less contrast between the text and the background.

## **Feeding**

It is not necessary to feed your Rosetta Disk, nor is sacrifice of livestock or virgins required or recommended. Feel free, however, to bury your disk in the dirt, toss it in the ocean, leave it on a cooling lava flow, or blast in into space (we did) and it should be just fine. Future civilizations may even thank you.