

You
can
beat

Handpiece BURNOUT

with TLC
technology

A revolution is shaking the world of handpieces ... dead handpieces are restored, existing handpieces last 18-24 months longer, and even new handpieces purr like kittens.

New "TLC" Technology

It's not oil! It's a recent breakthrough in lubrication technology that solves many problems long associated with handpiece sterilization and lubrication.

TLC Technology is Nano Lubrication that can virtually eliminate 90% of friction and wear. This lubrication breakthrough was developed specifically for the dental handpiece. TLC cures sluggish turbines and accelerated wear by protecting handpieces under extreme pressures and temperatures. TLC lubrication is non-toxic, non-flammable, biodegradable and even food grade.

How Does TLC Work?

TLC Nano Technology is chemistry working at the molecular level to form an invisible, near permanent friction barrier. This virtually indestructible bond forms a new surface and creates a self-replenishing barrier. It is this micro-thin TLC polymer layer which eliminates 90% of friction and wear resulting in a faster, smoother, and quieter handpiece.

The TLC polymer coating forms on all interacting metal-to-metal and metal-to-ceramic surfaces when the handpiece runs at full speed for a couple of seconds. TLC stays in place during sterilization eliminating the need to lubricate after sterilization. The polymer provides boundary lubrication throughout the complete dental procedure and prevents the ingested debris from adhering to the critical bearing components.

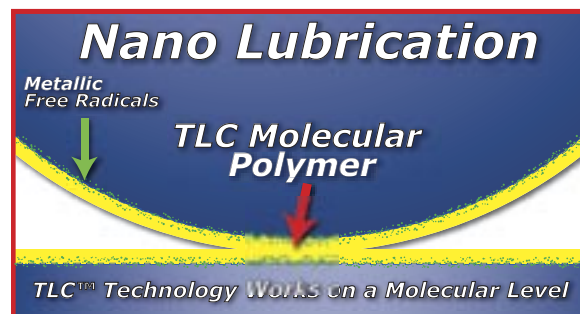
As a result, handpiece life is extended and costly handpiece repairs are reduced and/or eliminated. New and dead handpieces can be restored to faster speeds and more torque.

Sterilization Is NOT The Problem

Sterilization of dental handpieces was not recommended until the early 1990's. Dentists began autoclaving and quickly learned that the component materials of the handpiece could not withstand the pressures and temperatures of the super heated steam during the autoclave process. Plastic tubing, o-rings and solder joints melted when subjected to these conditions.

Subsequently, handpiece manufacturers developed instruments using better materials designed to survive the sterilization process. Today's dental handpieces are feats of modern technology able to sustain speeds of 250,000 to 500,000 revolutions per minute (rpm). It is a rare occasion that any other piece of equipment exceeds these operating speeds!

Handpieces and their components are engineered from the finest metals, heat resistant o-rings, gaskets, and bearing technology. Think about this—if the component parts were bagged and sterilized separately they would last



TLC™ Technology chemically reacts with free radicals on interacting metal surfaces, forming a true eutectic polymer which provides lubrication. This solid boundary barrier prevents metal-to-metal and metal-to-ceramic contact, reducing friction and wear by approximately 80% to 90%, dramatically increasing the life of bearings. The molecular bond stays in place during sterilization and high speeds, providing lubrication throughout the entire dental procedure. The solid TLC polymer repels water/steam and ingested debris.

forever. The cage being the weakest material would eventually dry out from the heat, become brittle and fail only under stress.

Recurring handpiece repair has become a widely accepted part of a dental practice. If they are engineered to withstand the autoclave, what is causing handpiece failure?

Traditional Lubrication IS The Problem

Modern dental handpieces have met the criteria for sterilization. Common sense tells us these high-speed miracles of engineering need to be cleaned and lubricated. Since the inception of sterilization, very little has been done to improve the dental handpiece lubricants. Only when traditional oil is introduced into the sterilization process handpiece turbines become sluggish and fail in 6 to 8 months ... sometimes less. Why? The answer is simple: *Oil and water do not mix.*

Traditional handpiece lubricants are low viscosity mineral oils. When a handpiece is lubricated and subjected to steam sterilization, the water from the super heated steam and oil creates a slurry. As the handpiece goes through the autoclave's drying cycle, the slurry thickens to become a "goopy residue."

During the dental procedure, the handpiece running at 250,000 to 500,000 rpm becomes a strong miniature vacuum. The high-speed handpiece will ingest blood, saliva and micro particles of tooth, amalgam and composite into the turbine and bearings, most of which contain animal proteins.

After each dental procedure the handpiece is returned to sterilization where it is again lubricated and sterilized. As the handpiece is cycled and recycled, the goopy residue, now a mixture of oil, water, protein and debris, becomes thicker and thicker.

However negligible this build-up, the "goopy residue" begins to slow the handpiece down, increasing bearing wear and operator frustration. Even the smallest residue



Goopy residue is baked on turbines & inside bearings.





These components are so small that any amount of debris can interfere with the rotation of micro precision ball bearings.

(pictured in the dimple of Roosevelt's ear)

can restrict rotation of the precision bearings.

The handpiece progressively becomes slower and slower. Many dentists recognize the problem only when the handpiece becomes so sluggish it will not cut a tooth, causing loss of valuable time and potential profits.

At this point, the dead handpiece goes in the drawer for repair. I can see your head nodding "yes." This scenario plays out every day, over and over, in thousands of modern-day dental offices fueling the handpiece repair business, which exceeds \$200 million dollars a year.

The Secret To Resurrection

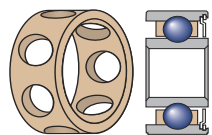
In the absence of superior cleaning and lubrication, every handpiece is destined to "die" sooner than it should. Once a handpiece dies, it is often put in the hands of a repair technician ... but approximately 3 out of 5 dead handpieces can be resurrected with an advanced yet simple cleaning.

Once again, technology comes to the rescue. The partner to TLC nano lubrication is a customized cleaner able to "evaporate" buildup of proteins, baked-on oil, and debris from the miniature surfaces of the turbine. This cleaning frees the bearings and "resurrects" or extends the life of the handpiece.

After a thorough cleaning, the handpiece can be lubricated, autoclaved and returned to service. *Note: Currently, Bio Lube™ Advanced Handpiece Cleaner is the only product to use this technology.*

Caution!

If the use of traditional oil is continued after an advanced cleaning, the resurrected handpiece is destined to accumulate the gooey residue leading to accelerated handpiece failure.



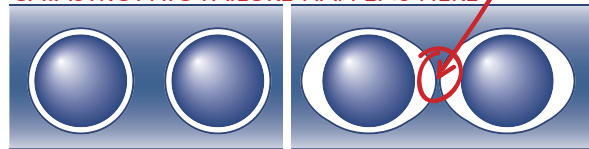
Bearings are held in place with a high temperature resin "cage."

This residue attracts more debris and acts like sandpaper, increasing wear on the bearing cage. The cage is a critical part of the bearing; it holds the precision balls in place.

The perfectly round and symmetrical holes designed into the cage will gradually become oval in shape from the constant stopping and starting of the operating handpiece.

The oval holes will grow in size until they touch an adjacent hole. Then the cage simply cracks and falls apart. This is known as a "catastrophic failure" of the bearing. At this point, no amount of cleaning or superior lubrication can help, as the bearings must now be replaced.

CATASTROPHIC FAILURE HAPPENS HERE



New Cage

Worn Cage

TLC technology, however, embodies proprietary ingredients to recondition the interior cage, keeping it pliable and resilient, reducing the normal oxidation and failure caused by sterilization.

Solutions?

Attempts have been made to solve maintenance problems and handpiece burnout ... but they have done little more than relieve the office staff of duties.

Maintenance Stations

Handpiece manufacturers have introduced lubrication stations to help overcome the challenge of maintaining handpieces. Part of the design is to flush enough lubricant (which contain solvents) through the handpiece in an attempt to clean as well as lubricate the components. The convenience has promoted

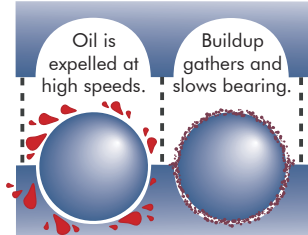
a better maintenance routine, but still uses traditional oils resulting in the same problems associated with sterilization.

Maintenance-Free Handpieces

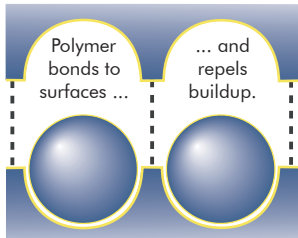
Maintenance-free handpieces are not exactly lubrication-free. Bearings are pre-packed with grease, which suffers from the same scenario as oil. Ingested debris still accumulates and accelerates cage wear ... maybe more so because instructions specify no cleaning or lubrication. In fact, using traditional lubricants containing solvents removes the grease. Without the grease, the bearings need constant cleaning and lubrication.

The convenience of automatic maintenance stations has promoted a more reliable regimen for cleaning and lubrication using traditional oil.

PROBLEMS WITH TRADITIONAL OIL



BENEFITS OF TLC TECHNOLOGY



The grease alleviates the responsibility of maintenance by the office staff. But both of these options have not solved all the problems of traditional oils and sterilization.

Even stringent maintenance routines with traditional oils provides minimum lubrication under the extreme speeds at which dental handpieces run. At 250,000 to 500,000 rpm, lubricants are expelled. Accelerated wear tests show that traditional oils and no lubrication create the same amount of wear.

Bottom Line "It's Not Oil"!

In the advent of handpiece sterilization and the attempts to solve the problems posed by traditional oils, you can see why TLC nano lubrication technology is revolutionary!

- It's Not Oil! The TLC Polymer and water will not form a gooey residue, which eliminates sluggish turbines.
- TLC Polymer, provides lubrication and stays in place at 500,000 rpms, .
- Proprietary TLC additives condition and maintain the critical cage material protecting it from becoming brittle in the autoclave. No other lubricant has this protection!

TLC technology solves the problems of traditional lubrication and sterilization. Handpiece life can be extended 18-24 months beyond the standard warranty, and TLC will not void the manufacturer's warranty.

With reduced repairs, cost of wasted time, increased production and operator satisfaction, a dental practice will save thousands of dollars in a matter of minutes by simply resurrecting the dead handpieces from the drawer! Handpiece maintenance with TLC makes more than sense - it makes "dollars and sense!"

Note: Currently, the only handpiece lubricant offering TLC Technology is the Bio Lube™ Advanced Handpiece Maintenance System.

Remember to follow ADA, CDC, and OSAP recommended sterilization procedures.

For more information about Bio Lube™ products, call 1-800-880-0240 or visit www.sdsouthland.com.

Easy Handpiece Maintenance

Clean & Let Dry



Lubricate 1 sec. Burst



Insert Bur & Run 30 sec.



Clean Slow Motors & Accessories



Bag & Sterilize



No need to lubricate after sterilization.

NEW!

Traditional Oil creates a gummy residue that attracts protein matter and slows turbines.

Innovative Cleaner Dissolves Protein and Oil with no Residue!

TLC Technology lubricates at the molecular level and repels buildup.

Advanced Handpiece Maintenance System