

# U.S. Government Saves Money, Improves Quality with Meta-Lax®

The U.S. Army, Navy, Air Force, and NASA rely on META-LAX® stress relief to save money and improve quality in making many of the highest quality parts in the world.

## The Process

Meta-Lax is a patented sub-harmonic vibratory stress relief process that is applied before machining or grinding to prevent distortion in metal parts making it easier to achieve ultra close tolerances. According to the U.S. Department of Energy, "Meta-Lax is a proven substitute for 80-90% of the heat treatment stress relief applications." Furthermore, Meta-Lax processing can be used *during welding* to prevent weld distortion and cracking thereby improving the quality and longevity of the weldment.

## The Recommendation

Bonal recommends one or more of the following:

1. Apply Meta-Lax stress relief before any machining step to prevent distortion.
2. Apply Meta-Lax stress relief periodically to maximize longevity.
3. Apply Meta-Lax during welding to prevent weld distortion and weld cracking.
4. Apply Meta-Lax during welding to increase service life.

## The Benefits

1. Eliminate up to 95% the time and costs for stress relief.
2. Prevent up to 84% the distortion following machining.
3. Prevent up to 93% the distortion from welding.
4. Increase up to 200% the service life.
5. Save up to 98% of the energy consumption and carbon emissions.

### U.S. Army - Watervliet Arsenal



#### 120 Mortars

"The results were outstanding. We saw our scrap rate go from 50% to zero and stay there."

### NASA - Langley Research Center



#### Wind Tunnel Frame.

"I think of Meta-Lax as an extra trick up my sleeve for a higher quality product."

### U.S. Navy - Pearl Harbor



#### Fairwater Plane.

"The Indy's fairwater was chosen because it had been welded several times only to have cracked each time. Using the 'Meta-Lax' process the weld held without cracking!"

### NASA - Dryden Flight Research Center



#### Transport Mount for ISS Lifeboat.

"By using Meta-Lax weld conditioning, the program went quite smoothly even though it took over 30 days to weld."

# Current Use of Meta-Lax® on Government Jobs



Launch Sequencer



Guidance Missile Platform



Deep Space Telescope Housing



U.S. Navy Crane Boom



Bulkhead Dam Gate

## Partial List

### NASA

Space Shuttle Nose Cone  
Space Shuttle Rocket Booster Forgings  
Space Shuttle Landing Gears  
Space Shuttle Wheels  
Space Station Life Boat Mount  
Galileo Space Probe Battery Cells  
Cruise Missile Housings  
Hubble Space Telescope Components  
Fresnel Lens System  
Camera Mounts for Satellites  
Cooling Chamber for Satellites

### U.S. Army

120 mm Mortars  
Rock and Diggers  
120 mm Gun Mount Cradles  
155 mm Howitzer Muzzle Brakes  
A-Frame for Munitions Transport  
Body Buffers

### U.S. Navy

Torpedo Trays for Submarines  
Water Jackets for Submarines  
Fairwater Planes for Submarines  
Guidance Gyros for Submarines  
Catapult Launchers for Aircraft Carriers  
Aircraft Elevators for Aircraft Carriers  
Jet Blast Deflectors for Aircraft Carriers  
Track Channels for Aircraft Carriers  
Cargo Boom for Ship  
Torque Tube for Ship  
Tail Shaft for Ship  
Mine Sweeper Components  
Water Brake Cylinders  
Launch Valve Cylinders  
Coast Guard Ice Breakers  
Primary Engine Foundations  
Mine-Hunter Components

### U.S. Air Force

Longeron  
Wing Flaps  
F/A-18 Gun Handling Adapters  
F/A-18 Landing Gears  
A-10 Warthog Landing Gears  
KC-135 Engine Trailers  
Apache Helicopter Cockpit Frame  
Attitude Control System



## Opportunity



Missile Housings



Aircraft Elevator Support



Telescope Seal



Bonding Fixture



Longeron

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**YOU SHOULD TOO!**

Contact Bonal Technologies, at 1-800-638-2529



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