

Manufacturers of Precision Cleaners and P-80® Assembly Lubricants
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CASE STUDY: P-80® THIX RUBBER LUBRICANT GEL Solves Many Hydraulic Line Assembly Problems

Accomplishments

1. Eliminate false positive hydraulic leaks and contamination
2. Allow easier thread starts and aligned joint assemblies
3. Achieve torque specification

Additional Benefits

- **Reduce** installation force
- **Temporary** – once dry the lubrication is gone
- **Biodegradable** - safe for users and environment
- **Achieve** closer fits
- **Improve** product performance

Challenges

A worldwide crane manufacturer experienced problems with hydraulic systems. Problems included contamination, rolled O-rings, leaks, and line shut-downs because of many false-positive leak detections. Multiple petroleum-based lubricants were used over the years for the assembly of hydraulic hoses and thread starts. While these lubricants eased the assembly of the hydraulic lines and facilitated thread starts, the lubricants, if not applied meticulously, slowed production, increased cost of quality, and increased rework. Over application of these lubricants caused residue to remain in and around hydraulic lines attracting dirt, contaminating hydraulic systems, fluorescing brightly during black light leak inspections – leading to false positive results, and reducing installation torque over time. When used sparingly, the lubricants caused leaks from rough thread starts, rolled O-rings, friction-related damage, misaligned parts, and low installation torques.

Solution

A cross-functional leak-prevention team of design and material engineers and hydraulic line assemblers trialed P-80® THIX Rubber Lubricant Gel for assembly of hydraulic lines and coating of threads for wet torque starts. Since P-80® THIX is a water-based emulsified thixotropic gel, the volume applied was not critical. Once applied, P-80® THIX remained in place regardless of the part's orientation. The gel as a whole reduced assembly friction by 70% thereby eliminating rolled O-rings and misaligned parts. Installation torque was achieved consistently.

After assembly, P-80® THIX begins to evaporate and loses its lubrication, leaving at most a negligible residue. If any P-80® THIX remains it will not attract dirt or contaminate the hydraulic system. Furthermore, it will not fluoresce and cannot reduce torque over time.

P-80® THIX is biodegradable. P-80® THIX is not petroleum-based, so it provides temporary lubrication and will not swell or soften elastomers. P-80® THIX is made from plant-derived renewable resources and is non-hazardous based on lab tests.

The crane manufacturer experienced an immediate improvement in cost of quality and on-time delivery metrics. P-80® THIX has been implemented throughout the entire assembly floor and is currently being trialed at other locations worldwide.



TEMPORARY RUBBER LUBRICANTS

Water-Based • Non-Toxic • Non-Flammable • Ready to Use

Use P-80® to help:

- ✓ Avoid musculoskeletal and slippage related injuries
- ✓ Increase production rates
- ✓ Achieve closer fits
- ✓ Reduce Rejects
- ✓ Improve product performance
- ✓ Reduce installation force

ABOUT THE LUBRICANTS

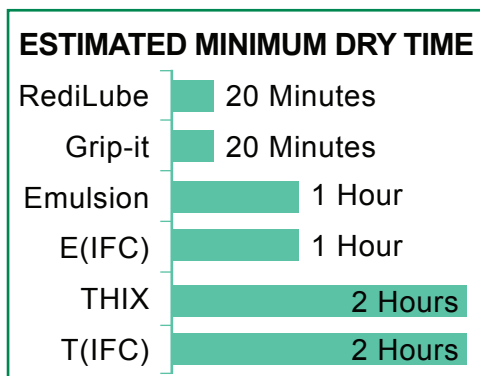
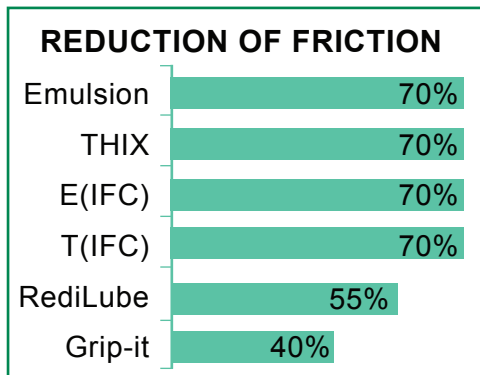
P-80® Emulsion: "The Original." A biodegradable blend of synthetic esters and water. P-80® Emulsion provides a thin film of lubrication to significantly reduce friction.

P-80® THIX: A biodegradable, non-drip thixotropic gel that is ideal for overhead and vertical assembly operations. Provides excellent lubrication.

P-80® Grip-it: A quick-drying, water-based surfactant mixture that dries tacky to help parts stay in place. Excellent for use on pressure-tested hoses.

P-80® RediLube: A biodegradable, low-residue lubricant designed for use on non-porous and coated rubber surfaces. Lubricates well but dries quickly and completely.

P-80® Emulsion IFC & P-80® THIX IFC: Have the same lubricating properties as P-80® Emulsion and P-80® THIX, but are formulated for use on parts that may come in contact with food. Typical applications include assembly of appliances, pumps, and food-processing equipment. P-80® IFC Temporary Rubber Lubricants are registered with NSF for use in USDA H1 applications and meet FDA regulation 21 CFR 178.3570, which controls lubricants in contact with food surface areas.



The chart below is designed to assist in determining the best P-80® for different applications. For most applications, the lubricants can be used interchangeably depending on the preference of the user.

	INDUSTRIAL LUBRICANTS				INCIDENTAL FOOD CONTACT LUBRICANTS	
	P-80® Emulsion	P-80® THIX	P-80® Grip-it	P-80® RediLube	P-80® Emulsion (IFC)	P-80® THIX (IFC)
Viscosity Index, cps @25° C	150	12,000	20	20	150	15,000
Biodegradable	Yes	Yes	No	Yes	Yes	Yes
Reduction of Friction	~70%	~70%	~40%	~55%	~70%	~70%
Estimated minimum dry time	1 hour	2 hours	20 minutes	20 minutes	1 hour	2 hours
pH	8.4	8.5	10.8	8.7	8.7	8.5
Appearance	Milky white to beige	White to beige gel	Clear, colorless	Milky white to light yellow	Milky white to beige	White to beige gel