

To: Lift-All Customer Date: 3/19/20
From: Lift-All Quality Assurance Department
Re: The Cleaning of Sling made from Synthetic Materials

We are contacting you in response to an inquiry that was directed to Lift-All with respect to the subject issue.

We offer the following comments regarding the cleaning of synthetic slings:

Cleaning agents

Slings must not be exposed to chemicals that are incompatible with the sling materials. Many of the material we utilize in the manufacture of our synthetic slings is substantially similar to the textiles used in making common clothing. The organic chemicals that are commonly used to clean clothing generally will be found to be compatible for use on Lift-All slings. Since clothes are often made from fabrics of polyester and nylon, these solvents have been specially developed to clean these materials without degrading them. Products of aramid materials, including Technora and Kevlar, may also be cleaned using these solvents

Solvents and Cleaning Chemicals

- Regular laundry detergent is compatible with synthetic materials including nylon and polyester
- For hard to clean stains, a carpet/upholstery cleaner like *Resolve* may be used if it is compatible with the materials such as polyester and nylon.
<http://www.powerofresolve.com/products/carpet-products/stain-removers/upholstery-stain-remover/>
- Dry cleaning solvents may also be used.
- **Avoid the use of bleach** - Nylon in particular is negatively affected by most oxidizing agents. Chlorine, for example, will rapidly degrade nylon.

Disinfecting Chemicals

Cleaning Agent	Conc. %	Polyester	Nylon	HMPE	Aramid
Alcohol Ethanol Isopropyl alcohol			Poor		
Ammonia (NH₃)		Good	Good		
Ammonia Chloride (NH ₄ CL)		Excellent	Poor		
Bleach (Chlorine)		Excellent	Poor		Poor
Ethylene Oxide			Good		
Formaldehyde	5 - 10	Excellent	Good	Excellent	Good
Formaldehyde	40	Excellent	Fair		
Formaldehyde	100	Excellent	Poor		
Hydrogen Peroxide	3	Excellent	Poor		

Cleaning Agent	Conc. %	Polyester	Nylon	HMPE	Aramid
Hydrogen Peroxide	10		Fair		
Hydrogen Peroxide	30 - 100	Poor	Poor		
Peracetic Acid	2	Excellent	Excellent		
Peracetic Acid	70	Poor	Poor		
Sodium Hypochlorite	<20	Excellent	Poor		Poor
Sodium Hypochlorite	100	Excellent	Poor		

Removing Mold from Slings

Of the common solutions that are sometimes used to combat mold, Baking Soda (Sodium Bicarbonate) appears to be compatible with synthetic sling materials. You may dissolve 1/4 to 1/2 cups of Baking Soda per gallon of warm water.

Other Solutions to avoid:

- *Hydrogen Peroxide* Not Compatible with most synthetic materials
- *Boric Acid* Compatible with Polyester. Only compatible w Nylon in short term applications in concentrations.
- *Vinegar (Mild Acid)* Compatible with Polyester. Not compatible w Nylon.
- *Chlorine* Compatible with Polyester. Not compatible w Nylon or Aramids

Equipment and Processes

The use of equipment or processes must be avoided if it disorients or mechanically damages any of the sling load bearing materials or exposes the sling to temperatures that exceed the noted limits.

The Cleaning Process

- The light scrubbing of the webbing material is acceptable. And to remove general gritty type dirt, the use of brushes, air hosing and vacuum cleaning should be suitable.
- To clean off stains, perhaps using some form of brushing with the cleaning agent along with a water rinse should be suitable
- Avoid using any equipment that tumbles a sling, as this disorients the yarn material.
- Avoid using high pressure water equipment on load bearing materials as suitable pressure limits have not yet been established.

General comments for the cleaning of synthetic slings:

The use of high pressure washing equipment on synthetic slings:

A pressure washer may also be lightly used on non-load bearing materials such as the covers of roundsling, as long as the surface material does not start to exhibit any damage. The synthetic yarn materials did hold up well during sample exposure to pressure washing equipment that we performed. However, this method should be discontinued immediately if any form of fuzzing of the surface material becomes evident. Also, keep in mind that this method of cleaning can in some cases rapidly

remove the color treatment dyes from the sling materials, and thus if color retention is important to you, you may wish to avoid use of this cleaning method.

If a quick pass using a pressure washer does not remove the substance, then light scrubbing using a sponge application of warm detergent water may be your best bet.

Avoid Using Washing Machines:

- As multiple washings of webbing slings and roundslings has shown this practice to negatively impact product performance, users are now instructed to avoid using washing machines.

Drying Methods

Comments on the use of drying machines to dry synthetic slings:

- Hang drying is the preferred drying method to use in drying synthetic type slings.
- Roundslings should not be exposed to any drying process that would cause them to tumble during the drying process.
- Temperature limits:
 - Nylon, and polyester synthetic slings shall not be exposed to temperatures in excess of 200°F.
 - Aramid slings including *Keyflex* Roundslings shall not be exposed to temperatures in excess of 320°F.

To check whether significant degradation may have occurred from any exposure, the slings may be proof tested to twice their rated capacity.

We hope this information fully addresses your inquiry.

Sincerely,



Greg Babinchak
Manager of Technical Services

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