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Ultra Clean Projectile Comparison

The UC-style (or "regular" style) Ultra Clean Projectile for hose and hose assembly cleaning has the following advantages over the industry standard that are offered by our competitors:

- 1. The Ultra Clean UC style Projectile is a "between density" virgin foam that has 3 main benefits for hose and hose assembly cleaning.
 - a. The Ultra Clean Projectile will clean both a cut piece of hose without fittings and the entire hose assembly after the fittings are either crimped or swaged on. All of our competitors require a dense Standard Style Projectile on the cut piece of hose and a Coupling Style Projectile for the hose assembly.
 - b. One style Projectile (Ultra Clean) reduces the user's projectile inventory by ½. Eliminates operator error in using the incorrect projectile for the job which could result in a stuck projectile or the hose not being properly cleaned.
 - c. Independent test results that show an ISO 13/10 cleanliness result using Ultra Clean Projectiles vs ISO 15/12 when using the Standard & Coupling Style Projectiles on the same size hose assembly.
- 2. Consistent Cell Structure and Pore Size which is key to its cleaning capabilities.
- 3. Minimal air permeation style foam that aids in speed of projectile and internal surface force being applied to the tube wall. In sizes above 60mm some of our competitors either spray glue or add a plastic film to the firing end of the projectile. This is done so that the projectile will not pass compressed air through it (Permeation). If air passes through the larger sizes chances are that the projectile will get stuck in the hose or tube.
- 4. The Ultra Clean UC style Projectiles are made from a virgin polyurethane that will not flake or create contamination as it travels through the hose or tube. Some of our competitors use re-bonded foam which will flake off and create contamination. Re-bonded foam is made from scrap material.
- 5. Ultra Clean Projectiles are packaged in sunlight- and ultra-violet- resistant bags. Ultra Clean Projectiles have a stabilizer added to the foam to help delay the yellowing process that naturally takes place when they are exposed to ultraviolet light.

6. All bags are labeled with a specific lot # that identifies the date of manufacture and machine that the UC style foam was manufactured on.

Abrasive Projectiles

- 1. The Ultra Clean Abrasive Projectiles has a laminated blue scrub pad on the front of the projectile. Ultra Clean is the only company thus far to offer this type of highly durable and extremely abrasive material.
- 2. Our competitors also offer an Abrasive Projectile which incorporates a scotch-brite pad laminated to the front of the projectile. The scotch-brite is not as abrasive as our scrub pad material. The scotch brite can come off during the cleaning process on the inide of the tube. This could result in the scotch brite becoming the contamination inside of the tube that is being cleaned. Our scrub pad will not come off inside of the tube.
- 3. Our Abrasive is more durable than scotch-brite therefore it will last longer and the customer will be able to get more uses or firings per projectile.

Grinding Projectiles

1. The Grinding Projectiles are built on our (UC) style Ultra Clean foam which is not as stiff as our competitors foam. They will fire through easier than our competitors grinders and conform to the inside diameter of the tube for a better grinding action.

Washing or reusing projectiles.

- 1. Washing projectiles is usually time consuming and not worth the effort. If they are washed then they will need to be dried before they can be reused.
- 2. It is possible to re-contaminate a hose or tube that is being cleaned by firing either a dirty projectile or a washed projectile that appears to look clean. Remember, the human eye can only see to 40 micron in size. The most harmful contamination in a hydraulic system is smaller than 40 micron.
- Washing the projectiles in a detergent could cause them to start to deteriorate. If any detergent is left on the projectile it could act as a contaminate to the hose or tube.
- 4. Solvent washing will cause the projectile to soften and expand which will most certainly affect the projectiles cleaning capabilities.