Technical Service Bulletin

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HYDRAcube® Storage Procedure

This Technical Service Bulletin provides information required to store HYDRAcap MAX® modules, which are part of the HYDRAcube® skid, as spares or in-situ after they have been placed in service.

Introduction

New HYDRAcap® MAX modules, which are part of the HYDRAcube® assembly, are stored and shipped in a 30% w/v calcium chloride ($CaCl_2$) to prevent biological growth.

NOTE: HYDRAcap® MAX modules must not be exposed to freezing conditions or fiber breakage may occur.

Storage of New Modules as Spares

New HYDRAcap® MAX modules that have not been assembled with the HYDRAcube® headers (original end caps are still in place) can be safely stored for up to 2 years provided that the guidelines in TSB 331 are met.

Storage in-situ

HYDRAcap® MAX module(s) that will be stored on the racks should follow the procedures below:

1. If the modules have been used, conduct an MC1 (maintenance clean with chlorine) and continue to step 3.
2. If the modules have not been used, ensure the preservative has been flushed from the modules by following TSB 352. Then, continue on to step 3 once the preservatives have been flushed.
3. If the modules will be stored for less than a 48 hour period, pump HYDRAcap® MAX filtrate quality water [i.e. from the Recovery Clean (RC) tank or filtrate break tank] or better (e.g. RO water) to the module(s) to ensure fibers do not dry out.
4. Isolate the module(s) to ensure the filtrate water does not drain from the system.
5. If the module(s) are stored on the rack for more than 48 hours and up to 1 month, it is recommended to pump at least a 25 ppm sodium hypochlorite solution into the modules. Higher chlorine concentrations may be necessary for some systems. In either case, ensure there is a residual free chlorine of at least 0.5 ppm in the

module throughout the 1 month or less period. The table below shows the various solutions needed for different storage times. It is required to change out this sodium hypochlorite solution at least once per month if a preservative such as Sodium Bisulfite (SBS, see step 6) is not used.

6. If the modules are stored for more than 1 month, preserve the system with a 1% SBS solution if there are any metal components on the system such as the plugs. A 30% calcium chloride will corrode metals.
7. To restart the system, an MC1 needs to be conducted for modules that have been preserved with sodium hypochlorite (not necessary for systems stored for less than 48 hr or for systems stored with SBS).

Table 2: Solution required for various storage times

Storage Time	Solution
Up to 48 hours	HYDRAcube® filtrate quality water or better
Up to 1 month	25 ppm sodium hypochlorite and check residual chlorine is at least 0.5 ppm
> 1 month	1% w/v Sodium Bisulfite

Storage of Used Modules Off System

If the user prefers to store the modules off the rack, follow the procedures below:

1. Conduct an MC1 (maintenance clean with chlorine).
2. Ensure the modules are thoroughly rinsed with fresh HYDRAcap® MAX filtrate and free from any residual chlorine.
3. Remove the module(s) from the rack.
4. Drain all excess water from the module.
5. To hold the preservative in the module, each port will need to be plugged or you will need to replace the headers with the original end caps and plugs.
6. Through the upper filtrate port of the module, introduce 30% w/v $CaCl_2$ solution.
    a. HYDRAcap MAX 40 – 1500 ml ± 50 ml of solution
    b. HYDRAcap MAX 60 – 2000 ml ± 50 ml of solution
    c. HYDRAcap MAX 80 – 2500 ml ± 50 ml of solution
7. Place caps onto all four ports to maintain cleanliness, prevent evaporation, and reduce neutralization of $CaCl_2$ storage solution.
8. Place the modules horizontally. If the original end caps are used, ensure the filtrate ports are facing up.

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