

## HyStem®-C and HyStem®-HP Gelation Time Variation

The HyStem®-C Hydrogel Kit consists of:

- Glycosil® (thiol-modified hyaluronic acid)
- Gelin-S® (thiol-modified gelatin)
- Extralink® (PEGDA, polyethylene glycol diacrylate)
- Buffer A and Buffer B reconstitution buffers

The HyStem®-HP Hydrogel Kit has the same composition except Glycosil is replaced with Heprasil® (CMHA-S with thiol-modified heparin).

When solutions of Glycosil/Heprasil and Gelin-S are mixed with Extralink (1:4 volume ratio of Extralink to Glycosil/Heprasil + Gelin-S), a transparent hydrogel forms. Standard gelation time is 10–15 minutes.

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### Factors Affecting Gelation Time

Gelation can be accelerated or slowed by adjusting the following parameters:

- pH of Glycosil + Gelin-S solution (higher pH = faster gelation)
- Ratio of Glycosil to Gelin-S (more Glycosil = faster gelation)
- Ratio of Extralink to Glycosil + Gelin-S (more Extralink = faster gelation)
- Concentration of Extralink (less dilution = faster gelation)

Gelation time is highly sensitive to pH. The table below shows pH data for Glycosil-only hydrogels, but the same trends apply to hydrogels containing Gelin-S or Heprasil. If precise gelation time is required, a bench-top gelation test should be performed before using the hydrogels in vitro or in vivo.

<u>Glycosil, mL</u>	<u>Extralink, mL</u>	<u>pH</u>	<u>Gelation, min</u>
0.5	0.125	6.76	0:50
0.5	0.125	7.07	0:32
0.5	0.125	7.28	0:23
0.5	0.125	7.60	0:12
0.5	0.125	8.59	0:02