



SELVOL 418 POLYVINYL ALCOHOL FOR EMULSION POLYMERIZATION

Sekisui Specialty Chemicals has developed a specific grade of polyvinyl alcohol (PVOH) for emulsion polymerization: Selvol 418. Selvol 418 is an intermediate viscosity and hydrolysis grade (Table 1), providing a balance of properties between those of fully and partially hydrolyzed grades of Selvol.

The unique combination of properties offered in Selvol 418 allows for the development of emulsion polymers with greater formulation capabilities. Selvol 418 can be used by itself or in conjunction with other grades of PVOH to product stable emulsions. When compared to

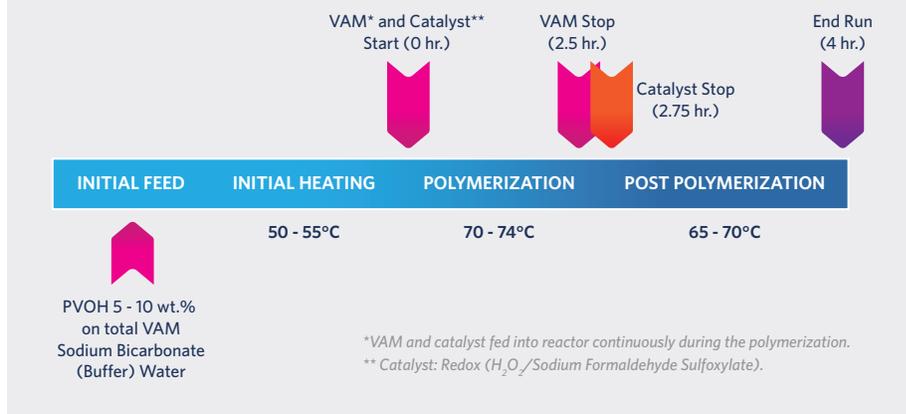
routinely used partially hydrolyzed grades, Selvol 418 can provide improvements in water resistance and greater compatibility with fully hydrolyzed PVOH even in post addition with the increased hydrolysis level.

This allows formulation of adhesives with improved water resistance.

TABLE 1:
Typical Properties of Selvol 418 PVOH

Hydrolysis Level (%)	91-93
4% Solution Viscosity (cPs)	14-19
pH	4.5-7
Volatiles, % Max.	5
VOC's, % Max.	1
Ash, % Max.	0.90

FIGURE 1: Polymerization Procedure



TEST COMPARISONS

The following recipe was used to evaluate Selvol 418 vs. Selvol 523 (88% hydrolyzed, medium viscosity grade) polyvinyl alcohols in emulsion polymerization.

Table 2 shows the resulting emulsion properties using Selvol 418. Figure 2 is a relative measure of water resistance and Figure 3 indicates the compatibility of the emulsion with post-added PVOH. For these tests, Selvol 418 provides both increased water resistance and improved compatibility with post-added PVOH.

TABLE 2:
Emulsion Properties Using Selvol 418 PVOH

wt % PVOH/VAM	6
% Solids	55
pH	5
Free Monomer (%)	<0.5
Viscosity (cPs)	1000
Thickening Ratio	2.3
Speed of Set (sec)	6-9

FIGURE 2:
Retention of Adhesive Strength after 5 minute Water Soak

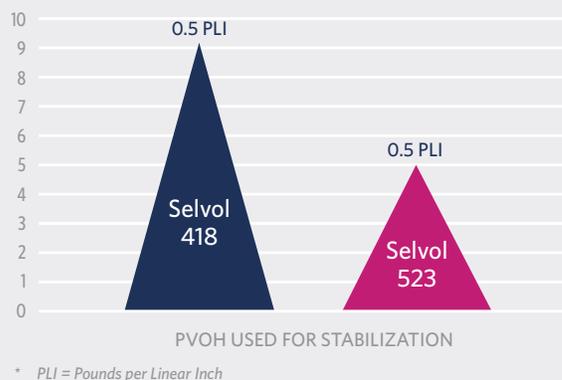


FIGURE 3: Compatibility Comparison between Selvol 418 and Selvol 523 Stabilized Emulsions



* Compatibility test run by mixing 50/50 by volume emulsion and 10 wt % PVOH solution. The mixture was then diluted to a viscosity of 1000 cPs and stored for 1 week at 70 °C.

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