



Formulation

Name	SPORTS 2X LIQUID LAUNDRY DETERGENT	
No.	1140	
Description	2X heavy-duty liquid (HDL) formulated for use on sports clothes.	
Formulation	<u>INGREDIENTS:</u>	<u>% by Weight</u> <u>Functionality</u>
	BIO-SOFT® S-101	7.22 Surfactant
	STEOL® CS-460	16.67 Surfactant
	BIO-SOFT® EC-690	16.67 Surfactant
	Hardened Coconut Fatty Acid	1.00 Foam Modifier
	Sodium Hydroxide (50% aqueous solution)	3.60 Neutralizer
	Borax Pentahydrate	1.90 Stabilizer
	Propylene Glycol	1.50 Stabilizer
	Citric Acid (50% aqueous solution)	3.30 Builder
	Triethanolamine	0.53 Buffer
	Monoethanolamine	0.53 Buffer
	Fluorescent Whitening Agent	0.16 Brightener
	Protease	2.20 Enzyme
	Amylase	1.10 Enzyme
	Deionized Water, Fragrance, Colorant, and Preservative	q.s. to 100 Additives
	Total	100.00
Procedure	<ol style="list-style-type: none"> 1. Charge 140°F (60°C) water (50% of the calculated total required) and start agitation. Keep agitation going until batch is complete. 2. Add Fluorescent Whitening Agent. Mix for at least 30 minutes if Whitener is a powder. 3. Add Citric Acid with mixing, wait until dissolved. 4. Add Borax Pentahydrate with mixing, wait until dissolved. 5. Add Propylene Glycol with mixing. 6. Add Monoethanolamine with mixing. 7. Add Triethanolamine with mixing. 8. Add Hardened Coconut Fatty Acid with mixing. The Fatty Acid should be added "molten" it will turn the batch cloudy when added. 9. Add 75% of the Sodium Hydroxide charge with mixing. Fatty Acid gels slightly, but dissolves. After a short time, batch will become clear. 10. Slowly add BIO-SOFT® S-101 with mixing. The batch will thicken a bit. 11. Add BIO-SOFT® EC-690 with mixing. 12. Add STEOL® CS-460 with mixing. 13. Adjust pH with Sodium Hydroxide (pH target range is 8.5 to 9.0, with a specific target of 8.8). 14. Once batch has cooled to 90°F (32°C) or below, add Preservative, Enzymes, Colorant, and Fragrance with mixing. 15. With mixing, add the remainder of required amount of Deionized Water to complete batch. 16. Run final pH check. If pH is below 8.5, adjust into target range with Sodium Hydroxide. If pH is above 9.0, adjust into target range with BIO-SOFT® S-101. 	
Physical Properties	Appearance at 25°C pH, as is	Clear liquid 8.5–9.0 (8.8 = target)

	Viscosity at 25°C, cps	150–300
Storage/ Stability	3 Freeze/Thaw Cycles	Pass
	4 Weeks at 5°C	Pass
	4 Weeks at Room Temperature	Pass
	4 Weeks at 40°C	Pass
Instructions for Use	14 loads/21 fl. oz. bottle = 1.5 fl. oz./load	
External Comment	Marketing Notes: BIO-SOFT® EC-690 and BIO-SOFT® S-101 are approved ingredients on www.cleangredients.org . For further information, visit our website at www.stepan.com .	
Registered Trademarks of Stepan Company	BIO-SOFT® STEOL®	
For Additional Assistance	For applications or product handling assistance, call our Technical Service Department at 1-800-745-7837 (U.S.) or 011-334-76-505-100 (Europe). For ordering assistance, call our Account Service Department at 1-800-457-7673.	

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