

NOVA[®] SMART BLEND SYSTEM

Mixing Instructions

Dealer On-site Blending

To provide the Acepsis[®] dealer with the information necessary to establish the NOVA[®] SMART BLEND SYSTEM portion of the overall Acepsis[®] program in their market area. The information gives the dealer a range of options individually tailored to give the customer the options and approach needed for their best product use. This includes:

- Blending on site (farm)
- Pre-blending off site in a ready-to-use (RTU) form, or in a Pre-RTU form, where the product is then mixed on site in a traditional 1 : 1 chlorine dioxide mixing process.

The Acepsis[®] NOVA[®] SMART BLEND SYSTEM provides a set of highly concentrated **precursors** that dramatically reduces the operational costs associated with fully- / semi-diluted formations. Less freight. Less packaging. Less handling. In addition to the operational cost savings, the NOVA[®] SMART BLEND SYSTEM provides higher germicidal values (measured in ORP – mV) vs. pre-mixed, Pre-RTU formulations by providing higher chlorine dioxide yields and chlorite conversions.

Blending on-site (on farm)

The term “**blending on-site**” is used to identify the process for creating ready-to-use (RTU) solution(s) at its point of use: on farm. This can be accomplished using two primary methods:

1. Blending all of the NOVA[®] SMART BLEND SYSTEM Precursors through the NOVA[®] SMART BLEND SYSTEM, installed on-farm, or
2. Blending pre-mixed solutions, on-farm, in a conventional, 1 : 1 chlorine dioxide blending system.

There are 6 - NOVA[®] SMART BLEND SYSTEM Precursors (see below) used in the pre- / post-milking hygiene processes that make 3 – NOVA[®] SMART BLEND SYSTEM RTU (ready-to-use) formulations. The Precursors are extremely concentrated solutions that are blended with the local water source, producing the chlorine dioxide-based pre- / post- milking hygiene solutions (NOVA[®] SMART BLEND SYSTEM RTUs).

Acepsis[®] NOVA[®] SMART BLEND SYSTEM PRECURSORS

NOVA⁺ ACTIV
ACTIVATOR PRECURSOR (A1)

1. NOVA[®] SMART BLEND **Activator**: used in non-foaming pre-milking solutions. (Used with scrubbers.)

NOVA⁺ BASE
BASE PRECURSOR (B)

2. NOVA[®] SMART BLEND **Base**: used in pre- & post-milking solutions. For foaming, dipping or spraying applications.

Note: The Activator + The Base create chlorine dioxide.

Acepis® NOVA® SMART BLEND SYSTEM Mixing Instructions

Acepis® NOVA® SMART BLEND SYSTEM PRECURSORS (cont'd)



3. NOVA® SMART BLEND **Blue**: provides a blue dip solutions colorant, teat sealing agents and emollient system base.



4. NOVA® SMART BLEND **Gold**: like BLUE, provides a GOLD dip solutions colorant, teat sealing agents and emollient system base.



5. NOVA® SMART BLEND **Soft**: provides an added emollient system base for use in extreme environmental conditions.



6. NOVA® SMART BLEND **Foam**: delivers the highest coating / sealing and proprietary skin softening package.

These concentrated Precursors are blended on-site using an **on-site water source**. This water source must be free of minerals / chemicals that may affect the outcome of the blending process. Water is the largest component that is added to the Precursor / RTU / PRE-RTU formulations. It is essential that the water used in diluting the formulations to ready-to-use solutions, meet the requirements of the formulations.

ACEPSIS® is partnering with AgSource to provide a complete water analysis of the water source being used to produce RTU & PRE-RTU formulations

(See Appendix A: Water Testing).



Water Analysis									
Submitted By: MFO00013					Submitted For:				
Date Received: 03/07/2019					Date Processed: 03/12/2019				
Sample Collector: LG					Sample Location: Cold Liquor Tank				
Date/Time Collected: 03/06/2019 11:15 AM					WDNR Lab Certification Number: 737109450				
					WDATCP Lab Certification Number: 55-424				
					Laboratory Sample #: BL35271				
					Information Sheet #: 0162-03				
					DW030719-33				
Test Name	Method	Results	Units	MCL	LOD/LOQ	Dilution Factor	Prep Date	Test Date	Analyst
Total Calcium	SM3111 B	22	mg/L	NA	1.65.5	1	NA	3/8/2019	SH
Chloride	EPA 300.0	1.62	mg/L	280 mg/L	0.220.74	1	NA	3/7/2019	JA
Total Copper	SM3111 B	<0.04	mg/L	1.3 mg/L	0.640.14	1	NA	3/8/2019	SH
Total Iron	SM3111 B	<0.07	mg/L	0.3 mg/L	0.070.24	1	NA	3/8/2019	SH
Total Hardness (calculation)	SM3111B2340B	85	mg/L	NA	0.10.3	1	NA	3/8/2019	SH
Total Potassium	SM3111 B	<1.0	mg/L	NA	1.20.3	1	NA	3/8/2019	SH
Total Magnesium	SM3111 B	10	mg/L	NA	0.10.3	1	NA	3/8/2019	SH
Total Manganese	SM3111 B	<0.05	mg/L	0.05 mg/L	0.050.2	1	NA	3/8/2019	SU
Total Sodium	SM3111 B	<0.41	mg/L	NA	0.810.71	1	NA	3/8/2019	JA
Nitrate as N	EPA 300.0	5.87	mg/L	10 mg/L	0.100.34	1	NA	3/7/2019	JA
Lab pH	SM4600-HB	7.4	S.U.	6.4-8.5 mg/L	NA	1	NA	3/7/2019	TK
Sulfate	EPA 300.0	2.77	mg/L	250 mg/L	0.100.81	1	NA	3/7/2019	JA
Total Dissolved Solids	SM3540 C	320	mg/L	400 mg/L	NA	NA	NA	3/10/2019	JB
Total Zinc	SM3111 B	<0.02	mg/L	0.3 mg/L	0.020.08	1	NA	3/8/2019	SH

Sample Comments: Sample was received at laboratory outside of proper temperature parameters.

[Bracketed results] specify values greater than or equal to the LOD but less than or equal to the LOQ and are within a range of less-certain quantitation. Results greater than the LOQ are considered to be in the range of certain quantitation. LOD/LOQ units are the same as Result units.

LOD = Limit of Detection All LODs and LOQs are adjusted to reflect dilution RL = Reporting Limit MCL = EPA Maximum Contamination Limit
 LOQ = Limit of Quantitation NA = Not Applicable (see link below for more information)

Acepsis® NOVA SMART BLEND SYSTEM Mixing Instructions

The Acepsis® NOVA® SMART BLEND SYSTEM



The Acepsis® NOVA® SMART BLEND SYSTEM is designed to be used on-farm to blend the individual NOVA® SMART BLEND Precursor formulations into ready-to-use (RTU) formulations. The Acepsis® NOVA® SMART BLEND SYSTEM can blend several formulations independently for use in pre-milking, post-milking, water treatment and facility hygiene.

Using the Acepsis® NOVA® SMART BLEND SYSTEM, the NOVA® SMART BLEND Precursor formulations can make **1 pre-milking RTU solution**, and **1 post-milking RTU formulation**.

Pre-Milking RTU:



Post-Milking RTU:



Acepsis® NOVA® SMART BLEND SYSTEM Mixing Instructions

The Acepsis® NOVA® SMART BLEND SYSTEM PREP RTU Formulations

The Acepsis® NOVA® SMART BLEND **PREP** RTU is a mixture of water, NOVA® SMART BLEND Activator and NOVA® SMART BLEND Base. This RTU is a non-forming, pre-milking hygiene solution used with teat scrubber applications. The target use PPM levels, as formulated are:

- 125 PPM ACTIVE Chlorine Dioxide (ClO₂)
- 2,150 TOTAL TITRATABLE Chlorine Dioxide



The target PPM of 125 NOVA® SMART BLEND SYSTEM RTU solutions should be blended using the following table:

Table 1.

NOVA® SMART BLEND SYSTEM PREP RTU Blending Table*			
Formula Component	Oz. per Gallon	mL per Gallon	% per Gallon
Water	127.0	3,750	99.2
NOVA® SMART BLEND Activator	0.50	15	0.4
NOVA® SMART BLEND BASE	0.50	15	0.4
Total	128.0	3,780	100.0

Table 1. should be used as a reference when inputting formulations into the NOVA® SMART BLEND SYSTEM, or when blending the product manually.

***NOTE: Always add the water to the container prior to mixing the concentrated NOVA® SMART BLEND Activator with the NOVA® SMART BLEND Base.**

Acepsis® NOVA® SMART BLEND SYSTEM Mixing Instructions

The Acepsis® NOVA® SMART BLEND SYSTEM POST RTU Formulations

The Acepsis® NOVA® SMART BLEND **POST** RTU is a mixture of water, NOVA® SMART BLEND ACTIVATOR, NOVA® SMART BLEND BASE, NOVA® SMART BLEND BLUE or NOVA® SMART BLEND GOLD, NOVA® SMART BLEND SOFT, and NOVA® SMART BLEND FOAM. This RTU is a foaming, post-milking hygiene solution used in foaming, spraying or dipping applications, and **provides an emollient blending option that can be varied to match the conditions of an individual dairy.** The target use PPM levels, as formulated are:

- 250 PPM ACTIVE Chlorine Dioxide (ClO₂)
- 4,300 TOTAL TITRATABLE Chlorine Dioxide



The target PPM of 250 ACTIVE NOVA® SMART BLEND **POST** RTU solutions should be blended using the following: water, NOVA® SMART BLEND Activator and NOVA® SMART BLEND Base formulation Blending Table. We will be providing **3 formulation examples:** Table 2 – 2% Emollient, Table 3 – 5% Emollient, Table 4 – 10% Emollient. The first table (Table 2) is calculated with NOVA® SMART BLEND BLUE providing a 2% emollient system, along with other post dip features such as a low drip / teat sealing formulation. No additional emollient is added to this formulation:

Table 2.

NOVA® SMART BLEND SYSTEM POST RTU Blending Table* - 2% Emolient			
Formula Component	Oz. per Gallon	mL per Gallon	% per Gallon
Water	127.0	3,750	99.2
NOVA® SMART BLEND Activator	1.0	30	0.4
NOVA® SMART BLEND Base	1.0	30	0.4
NOVA® SMART BLEND BLUE	2.56	75.6	2.0
NOVA® SMART BLEND SOFT	0.0	0.0	0.0
NOVA® SMART BLEND FOAM	0.0	0.0	0.0
Total	128.0	3,780	100.0

***NOTE: Always add the water to the container prior to mixing the concentrated NOVA® SMART BLEND Activator with the NOVA® SMART BLEND Base.**

The Aceptis® NOVA® SMART BLEND SYSTEM POST RTU Formulations, cont'd

Table 3.

NOVA® SMART BLEND SYSTEM POST RTU Blending Table* - 5% Emolient			
Formula Component	Oz. per Gallon	mL per Gallon	% per Gallon
Water	119.6	3,489.6	92.2
NOVA® SMART BLEND Activator	1.0	30	0.4
NOVA® SMART BLEND Base	1.0	30	0.4
NOVA® SMART BLEND BLUE	2.56	75.6	2.0
NOVA® SMART BLEND SOFT	3.84	115.2	3.0
NOVA® SMART BLEND FOAM	0.0	0.0	0.0
Total	128.0	3,780	100.0

Table 4.

NOVA® SMART BLEND SYSTEM POST RTU Blending Table* - 10% Emolient			
Formula Component	Oz. per Gallon	mL per Gallon	% per Gallon
Water	113.2	3,489.6	89.2
NOVA® SMART BLEND Activator	1.0	30	0.4
NOVA® SMART BLEND Base	1.0	30	0.4
NOVA® SMART BLEND BLUE	2.56	75.6	2.0
NOVA® SMART BLEND SOFT	10.24	302.4	8.0
NOVA® SMART BLEND FOAM	0.0	0.0	0.0
Total	128.0	3,780	100.0

***NOTE: Always add the water to the container prior to mixing the concentrated NOVA® SMART BLEND Activator with the NOVA® SMART BLEND Base.**

Acepsis® NOVA® SMART BLEND SYSTEM Mixing Instructions

The Acepsis® NOVA® SMART BLEND SYSTEM SEMI-RTU Formulations

The Acepsis® NOVA® SMART BLEND **SEMI-RTU** system provides a guide that allows an Acepsis® distribution partner to produce a “Pre-RTU” formulation at their facility, enabling a farm to mix the Pre-RTU formulations on site, into an RTU formulation, dramatically reducing packaging and shipping costs.



The NOVA® SMART BLEND SEMI-RTU is the combination of NOVA® SMART BLEND Activator SEMI-RTU and NOVA® SMART BLEND Base SEMI-RTU, mixed on-site (on farm) on a 1 : 1 mixture rate. These SEMI-RTUs are produced “off site” using the instructions and mixing tables below.

NOVA® SMART BLEND **Activator** SEMI-RTU is the ACTIVATOR, in diluted form, that is mixed with NOVA® SMART BLEND Base SEMI-RTU, on-site to produce NOVA® SMART BLEND RTU, the pre-milking hygiene solution for non-foaming / scrubber applications. The target use PPM levels, as formulated are:

- 125 PPM ACTIVE Chlorine Dioxide (ClO₂)
- 2,150 TOTAL TITRATABLE Chlorine Dioxide

The target PPM of 125 ACTIVE NOVA® SMART BLEND **Activator** SEMI-RTU solutions should be blended using the following table:

Table 5.

NOVA® SMART BLEND SYSTEM Activator Semi-RTU Blending Table*			
Formula Component	Oz. per Gallon	mL per Gallon	% per Gallon
Water	127.0	3,750	99.2
NOVA® SMART BLEND Activator	1.0	30	0.8
Total	128.0	3,780	100.0

***NOTE: Always add the water to the container prior to mixing the concentrated NOVA® SMART BLEND Activator with the NOVA® SMART BLEND Base.**

The Aceptis® NOVA® SMART BLEND SYSTEM SEMI-RTU Formulations, cont'd

The NOVA® SMART BLEND Base is diluted with water to form NOVA® SMART BLEND Base SEMI-RTU, prior to blending the mixture with NOVA® SMART BLEND Activator SEMI-RTU, on-site, to produce NOVA® SMART BLEND RTU. the pre-milking hygiene solution for non-foaming / scrubber applications. The target use PPM levels, as formulated are:

- 125 PPM ACTIVE Chlorine Dioxide (ClO₂)
- 2,150 TOTAL TITRATABLE Chlorine Dioxide

The target PPM of 125 ACTIVE NOVA® SMART BLEND Base SEMI-RTU solutions should be blended using the following table:

Table 6.

NOVA® SMART BLEND SYSTEM Base Semi-RTU Blending Table*			
Formula Component	Oz. per Gallon	mL per Gallon	% per Gallon
Water	127.0	3,750	99.2
NOVA® SMART BLEND Activator	1.0	30	0.8
Total	128.0	3,780	100.0

NOVA® SMART BLEND Activator SEMI-RTU and NOVA® SMART BLEND Base SEMI-RTU are mixed on-site (on-farm) at a 1 : 1 mixture ratio to form NOVA® SMART BLEND RTU, the pre-milking hygiene solution for pre-milking scrubber applications.

***NOTE: Always add the water to the container prior to mixing the concentrated NOVA® SMART BLEND Activator with the NOVA® SMART BLEND Base.**