



## NOVEL® 23 and NOVEL® TDA Ethoxylates

### Description

Sasol offers two lines of biodegradable nonionic surfactants as alternatives for alkylphenol ethoxylates (APEO). The NOVEL® 23 Ethoxylate line is based on a C12/C13 alcohol blend that is approximately 50% branched. The NOVEL® TDA Ethoxylate line is based on a 100% branched C13 alcohol. Both product lines are available with 0.5 – 50 moles of EO and yield surfactants that:

- Are biodegradable and will not break down to toxic compounds or metabolites
- Comply with the biodegradation criteria for the European Detergents Directive
- Provide excellent wetting
- Have **similar HLB** values and properties to APE
- Contain minimal residual alcohol, glycol, and 1,4-dioxane content
- Exhibit low odor
- Are **liquid** at room temperature (up to 9 moles of EO for the NOVEL® 23 series and 12 moles for the TDA series)

### Ecological Properties

Examples of the types of biodegradation and environmental information available from Sasol North America are given below. Information for specific ethoxylates is provided upon request.

Example of each line:

#### Biodegradation:

28 days, Degradation

Biodegradation Status

#### NOVEL® 23E7 Ethoxylate

>60%<sup>1</sup>

Readily

#### NOVEL® TDA-3 Ethoxylate

>60%<sup>2</sup>

Readily

#### Toxicological Data

LC 50, 96 hours, fish, mg/l

1-10

1-10

IC 50, 72 hours, algae, mg/l

1-10

1-10

EC 50, 48 hours, Daphnia, mg/l

1-10

1-10

LD 50, oral rat, mg/kg

>1000

>10,000

<sup>1</sup>Gledhill test (OPPTS 835.3100)

<sup>2</sup>Modified Sturm Test (OECD 301B)

### Contact Information

For further information on these or other Sasol products, contact a sales representative at:

#### Sasol North America

2201 Old Spanish Trail

Westlake, LA 70669

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For technical inquiries or samples contact:

#### Sasol North America

Technical Information

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## Physical Properties

All of Sasol North America's NOVEL® 23 and TDA Ethoxylates have a water content of <1 wt.%, a flash point of >100°C, free EO content ≤1 ppm, and a pH (1% in water) of 6 – 8. Other physical properties are listed in the table below.

### Sasol Products with NPE Comparison

Surfactant	TYPICAL DATA								
	Active Content, %	Appearance, 20°C	Cloud Point, °C	Moles of EO	HLB	Solidification Point, °C	Hydroxyl Number	Density, 20°C g/cm <sup>3</sup>	Viscosity, cSt at 40°C
Nonylphenol Ethoxylate 3 mole	100	clear liquid	42 - 46 <sup>(2)</sup>	3	7.3	<-20			
NOVEL® TDA-3	100	hazy liquid	47 <sup>(2)</sup>	3	7.9	<-20	169	0.93	18
NOVEL® 23E2	100	hazy liquid	54 <sup>(2)</sup>	2	6.3	<-20	198	0.91	15
NOVEL® 23E3	100	hazy liquid	66 <sup>(2)</sup>	3	8.2	-17	172	0.93	15
Nonylphenol Ethoxylate 4 mole	100	clear liquid	54 - 56 <sup>(2)</sup>	4	8.9	<-20			
NOVEL® TDA-4	100	hazy liquid	55 <sup>(2)</sup>	4	9.3	-14	150	0.95	21
NOVEL® 23E3	100	hazy liquid	66 <sup>(2)</sup>	3	8.2	-17	172	0.93	15
NOVEL® 23E4	100	hazy liquid	71 <sup>(2)</sup>	4	9.7	-4	140	0.95	21
Nonylphenol Ethoxylate 6 mole	100	clear liquid	69 <sup>(2)</sup>	6	10.7	<-20			
NOVEL® TDA-5	100	hazy liquid	64 <sup>(2)</sup>	5	10.4	-12	134	0.97	24
NOVEL® 23E5	100	hazy liquid	77 <sup>(2)</sup>	5	10.7	-3	135	0.97	21
Nonylphenol Ethoxylate 9 mole	100	clear liquid	52 <sup>(1)</sup>	9	12.7	-5			
NOVEL® TDA-9	100	hazy liquid	59 <sup>(1)</sup>	9	13.2	3	93	1.01	41
NOVEL® 23E6.5	100	hazy liquid	50 <sup>(1)</sup>	6.5	12.0	5	117	0.99	26
NOVEL® 23E7	100	hazy liquid	58 <sup>(1)</sup>	7	12.4	5	111	0.99	27
Nonylphenol Ethoxylate 10 mole	100	clear liquid	52 - 58 <sup>(1)</sup>	10	13.3	5			
NOVEL® TDA-9	100	hazy liquid	59 <sup>(1)</sup>	9	13.2	3	93	1.01	41
NOVEL® 23E9	100	hazy liquid	81 <sup>(1)</sup>	9	13.5	13	94	1.01	32
Nonylphenol Ethoxylate 12 mole	100	clear liquid	81 <sup>(1)</sup>	12	14	12			
NOVEL® TDA-12	100	hazy liquid	85 <sup>(1)</sup>	12	14.4	12	76	1.03	51
NOVEL® 23E9	100	hazy liquid	81 <sup>(1)</sup>	9	13.5	13	94	1.01	32

(1) 1% in deionized water

(2) 10% in 25% butyldiglycol solution

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For detailed safety and handling information regarding these products, please refer to the respective Sasol North America Material Safety Data Sheet.

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