1,4-Dioxane Calculator Training







Agenda

- What is 1,4-Dioxane?
- Introduction to NY-law on 1,4-Dioxane
- What are Flex Ingredients?
- 1,4 Dioxane Online Calculator



Speaker



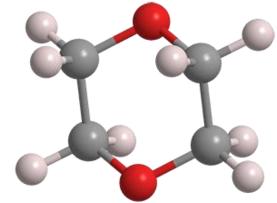
Prerna Chatterjee

Sustainability Manager, BASF Care Creations, North America



What is 1,4-Dioxane?

- 1,4-Dioxane is a synthetic chemical primarily used as a solvent and historically as a stabilizer for chlorinated solvents used in commercial and industrial applications.
- It can also be found as an impurity in household products such as deodorants, shampoos, toothpastes, and cleaning products.
- 1,4-Dioxane forms as a byproduct during the manufacturing process of certain surfactants and emulsifiers produced with ethylene oxide
- 1,4-Dioxane is completely miscible in water





Poll Question

How aware are you about the NY law on 1,4-Dioxane ?

- 1) Yes, I know about it in detail
- 2) No, I have no idea
- 3) I know it exists but don't know the details



New NY State law targets Home + Personal Care products

•	June 2019: New York State Senate and
	Assembly passed a bill to limit presence of 1,4-
	Dioxane in Household Cleaning products,
	Cosmetic products and Personal Care
	products.

Status: Signed in to law in New York
 December 9, 2019; Law goes in to effect
 January 1, 2022

NY Bill 1,4-Dioxane Limit Restrictions Summarized

Household Cleaning Products + Personal Care Products	 2 ppm by Dec. 31, 2022 1 ppm by Dec. 31, 2023 2025: Department of Environmental Conservation in consultation with the Department of Health can determine, by rule, if the "trace concentration threshold shall be lowered to better protect human health and the environment"
Cosmetic Products	 10 ppm by Dec. 31, 2022 2025: Department of Environmental Conservation in consultation with the Department of Health can determine, by rule, if the "trace concentration threshold shall be lowered to better protect human health and the environment"



What is Flex ?

Flex is BASF's portfolio of ingredients designed to offer formulation flexibility and help you comply with 1,4-Dioxane limits for finished personal care products ahead of the State of New York December 31, 2022 deadline.

Our *Flex* portfolio supports a seamless transition to meet new regulations in three ways:

1) Replace ingredients with Flex Low 1,4-Dioxane certified ingredients

2)Rebalance formulations with ingredients containing not more than 10 ppm 1,4-Dioxane

3)Reformulate products using alternative ingredients not expected to contain 1,4-Dioxane



Consider *Flex* ingredients if your products contain:

- Polyethylene glycols (PEGs)
- PEG-derivatized castor oils
- Ethoxylated alcohols
- Fatty alcohol mixed with ethoxylates
- Alkyl ether sulfates
- Glycol distearates
- Glycol distearate blends

BASF is a market leader in low 1,4 Dioxane solutions



BASF offers *Flex*ibility to Formulators with a new line of products

- We systematically evaluated our portfolio to give you the *Flex*ibility and confidence needed to create low 1,4-Dioxane formulas.
- We are investing in our assets to produce material that meets aggressive 1,4-Dioxane limits.
- Our formulation experts can support you with alternatives to 1,4-Dioxane-containing products.

Application	New FLEX Product Range	Product Type	Current 1,4- Dioxane spec (ppm)	New 1,4-Dioxane Spec (ppm)
	Pluracare® F 127 NF PR FLEX	Solubilizer	not more than 5	not more than 1
	Pluracare® E 400 NF PEG FLEX	PEG	not more than 10	not more than 1
	Pluracare® E 600 NF PEG FLEX	PEG	not more than 10	not more than 1
Personal	Texapon® N70 NA FLEXGold	Surfactant	N/A	not more than 5
	Texapon® N70 NA FLEXSilver	Sunaciani	N/A	not more than 10
Care	Eumulgin® O 10 Flex		N/A	not more than 1
	Eumulgin® B 25 Flex (NA)	Emulsifier	not more than 10	not more than 1
	Eumulgin® B 2 Flex		N/A	not more than 1
	Cetiol® HE Flex	Emollient	N/A	not more than 1
	Emulgade® 1000 NI Flex	Cream Base	N/A	not more than 1

A full product line for oral, rinse-off, and leave-on formulas



1,4 Dioxane Communication



Ingredient Options for Formulating Low 1,4-Dioxane Personal Care Products

www.carecreations.basf.us

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We create chemistry

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News Release

BASF launches 1,4-Dioxane Online Calculator for personal care formulators in North America

FLORHAM PARK, NJ, May 14, 2020 - BASF Care Creations™ has launched its new 1.4-Dioxane Online Calculator, which will allow personal care formulators to determine the 1.4-Dioxane content in their formulas. The tool, which is accessible from both desktop and mobile devices, also recommends alternative BASF ingredients to bring the total 1,4-Dioxane value of the formulation to less than 1ppm.

"This tool will assist our partners in complying with regulations ahead of the 2022 and 2023 deadlines," said Daniele Piergentili, Vice President, BASF Home & Personal Care, North America. "It is a testament to our commitment to support the growth of our customers by providing digital tools that ultimately make their lives easier."

S4389B, a New York state law signed in December 2019, prohibits the sale of personal care products and household cleaning products containing more than 2ppm 1,4-Dioxane, as well as cosmetics products containing 10ppm 1,4-Dioxane, by the end of 2022; for personal care and household cleaning products the limit will be further reduced to 1ppm at the end of 2023. The state of California is also assessing 1,4-Dioxane in home and personal care products through the Safer Consumer Products program and research is estimated to be completed in three years.

To allow for full formulation flexibility, in addition to the BASF product offering and recommendations, the 1.4-Dioxane Online Calculator allows inclusion of non-BASF ingredients if the 1,4-Dioxane level in them is entered. Formulators are also able to place sample requests for BASF ingredients directly from the calculator.

Explore the 1,4-Dioxane Online Calculator HERE.

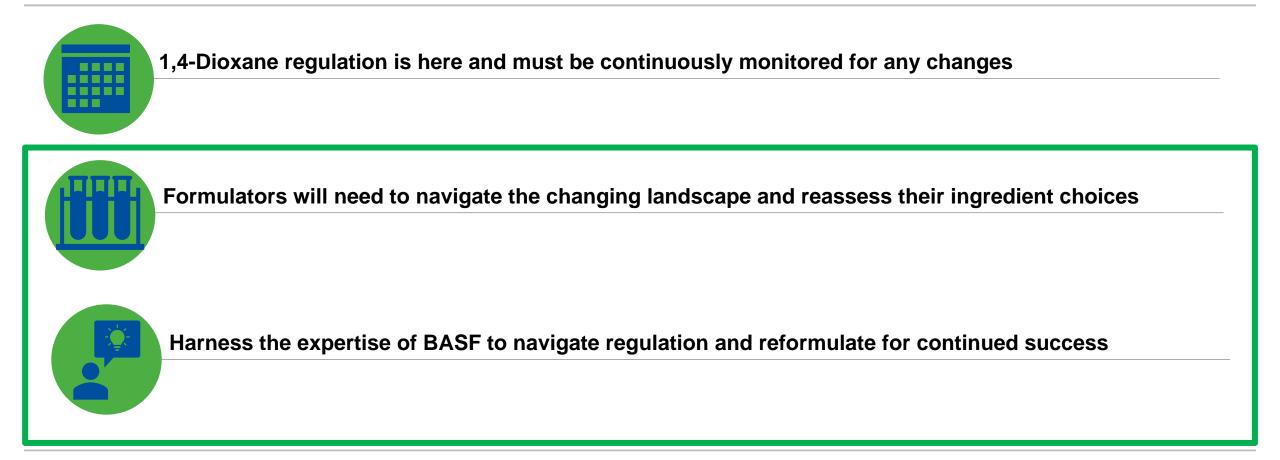
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Download Brochure here



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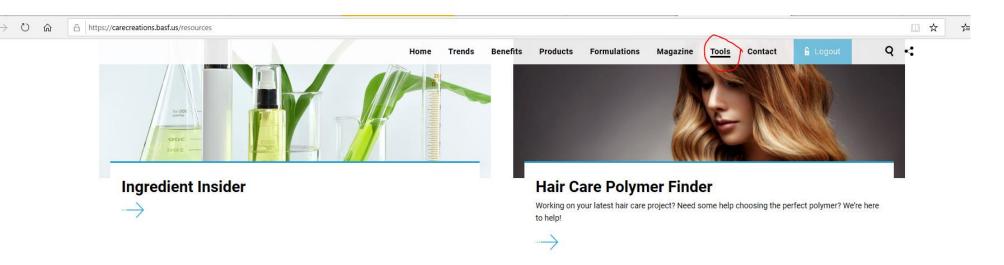




Introducing the1,4-Dioxane Calculator

Where is it located?

https://carecreations.basf.us/resources





Requires Login



1,4-Dioxane Calculator





1,4-Dioxane Calculator Benefits

- Save time in reformulating products for new 1,4-Dioxane limits
- Receive suggestions for replacement products quickly and easily within the calculator
- See which products are contributing the most 1,4-Dioxane to the formulation and where use levels should be adjusted
- Flexibility to calculate the 1,4-Dioxane level of the formula with ingredients from any supplier, provided the 1,4-Dioxane ppm level is known
- Provides a range (Example : 3ppm 5ppm)
- Keep track of your work with the "Email my Formula" feature



Poll Question

What is your role?

- 1) Personal Care product development
- 2) Business Leader
- 3) Purchasing agent
- 4) Other



Formulation Walk Through

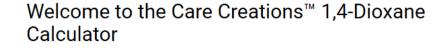


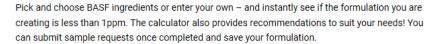




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Welcome to the Care Creations[™] 1,4-Dioxane Calculator



←Start Over

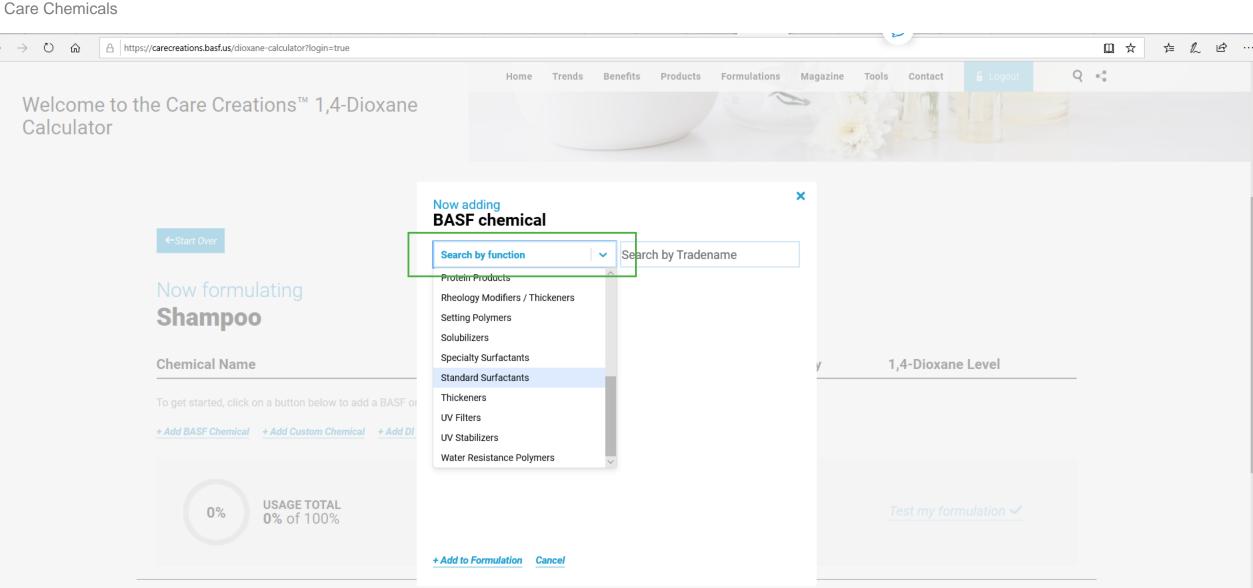
Now formulating Shampoo

Chemical Name		Usage Quantity	1,4-Dioxane Level
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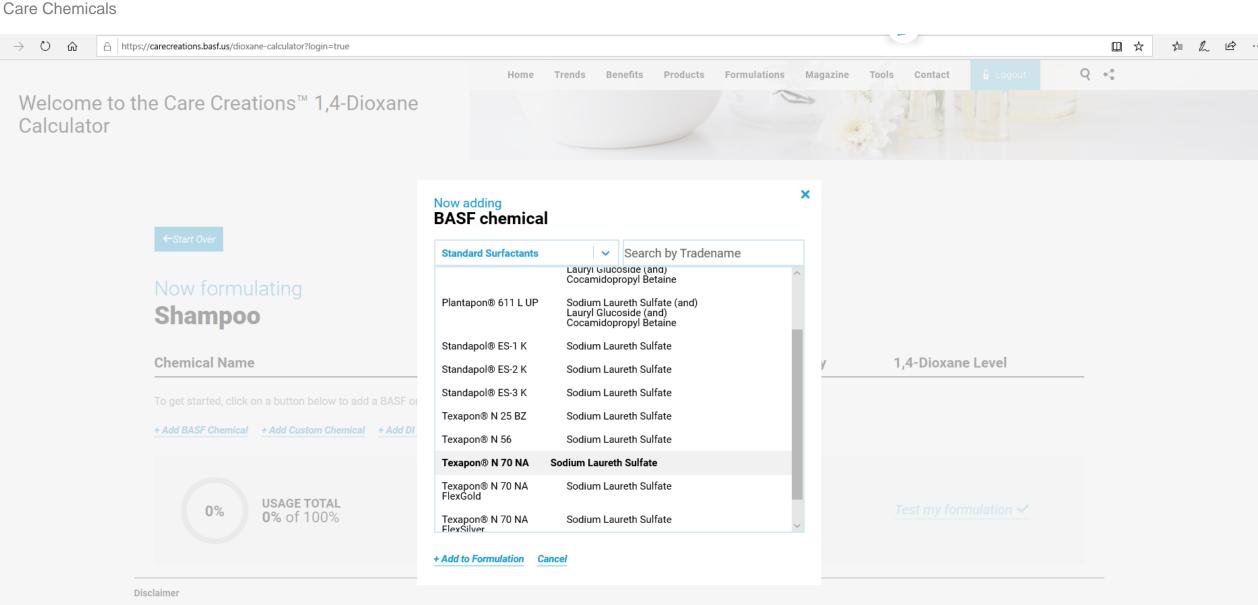




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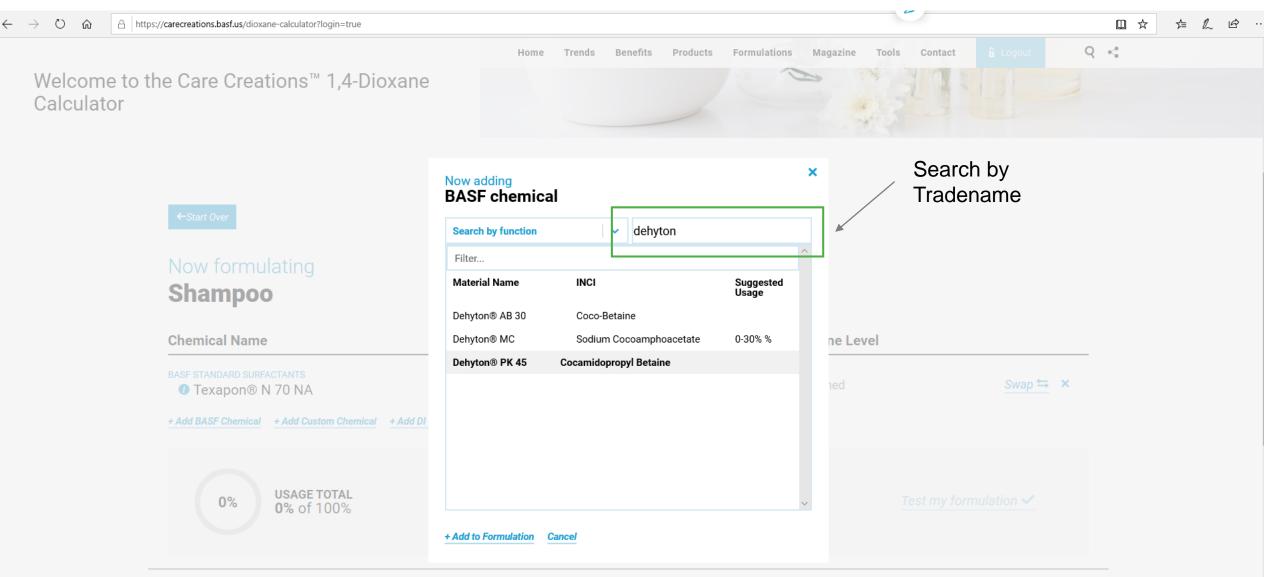




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1= L B \odot ŵ A https://carecreations.basf.us/dioxane-calculator?login=true □ ☆ Q < Trends Benefits Products Formulations Magazine Tools Contact Home Shampoo **Chemical Name Usage Quantity** 1,4-Dioxane Level × Now adding Search by Swap \leftrightarrows X **BASF** chemical Texapon® N 70 NA INCI Rheology Modifiers / Thickeners 🗸 Search by Tradename Swap \leftrightarrows X Dehyton® PK 45 \boldsymbol{k} laur × Material Name INCI Suggested + Add BASF Chemical + Add Custom Chemical + Add DI Usage Laureth-2 0-5% Arlypon® F Arlypon® TT PEG / PPG-120 / 10 0 - 5 % Trimethylolpropane Trioleate (and) Laureth-2 **USAGE TOTAL** 0% 0% of 100% Sodium Polyacrylate (and) Hydrogenated Polydecene (and) PPG-5 Laureth-5 Cosmedia® SPL 0 - 5 % Polyquaternium-37 (and) Dicaprylyl Carbonate (and) Lauryl Glucoside Cosmedia® Triple C 0 - 5 % Disclaimer While the descriptions, designs, data and information contained herein an Dehydol® LS 2 Deo N Laureth-2 0-5% ause many factors may affect processing or application /use, we recommend that you make tests to determine the suitability of a product), INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A Dehydol® LS 3 Deo N Laureth-3 0 - 5 % PARTICULAR PURPOSE ARE MADE REGARDING PRODUCTS DESCRIBED AL PROPERTY RIGHTS OF OTHERS. IN NO CASE SHALL THE DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSIL al-care.basf.com or www.carecreations.basf.com

+ Add to Formulation Cancel

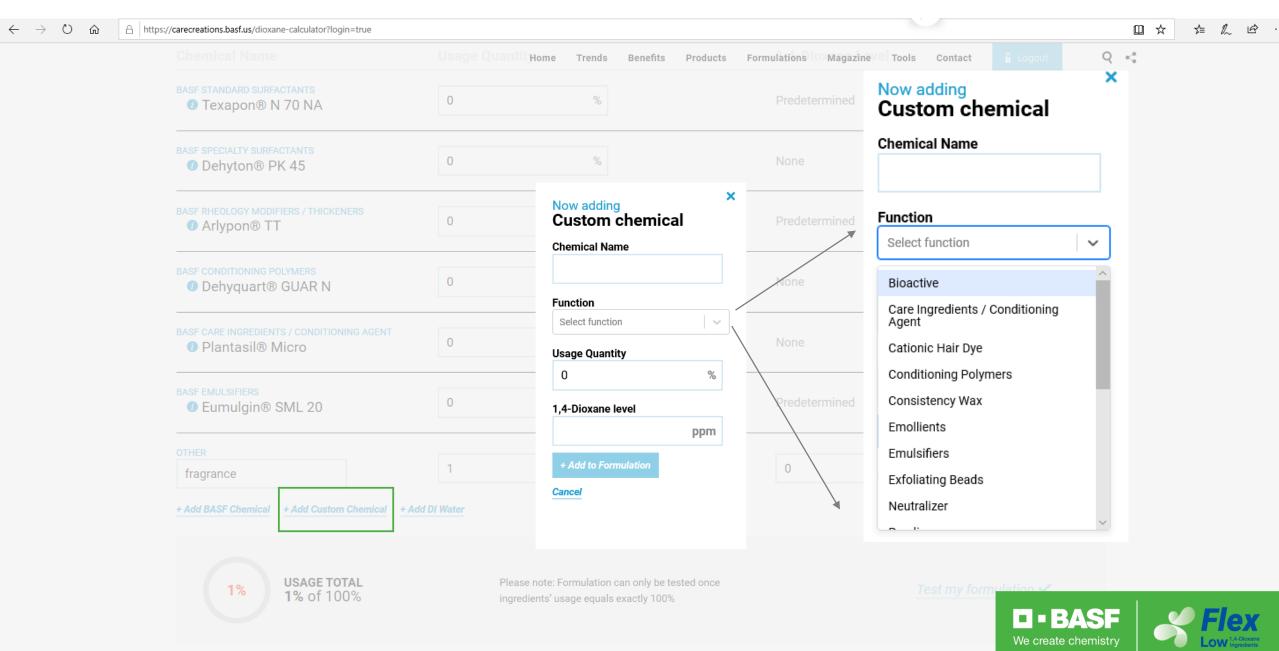
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Now formulating Shampoo	Home	Trends Benefits Products	Formulations	Magazine Too	ols Contact		Q e ₀		
Chemical Name	Usage Quantity		1,4-D	ioxane Level					
BASE STANDARD SURFACTANTS Texapon® N 70 NA	Now adding BASF chemica	I		× ned		Swap ≒ →	<		
BASE SPECIALTY SURFACTANTS (1) Dehyton® PK 45	Rheology Modifiers / 1	Thickeners 🗸 Search by Traden	ame	^		Swap ≒ →	<		
+ Add BASF Chemical + Add Custom Chemical + Add DI	Material Name	INCI	Suggested Usage						
0% USAGE TOTAL	Arlypon® F Arlypon® TT	Laureth-2 PEG / PPG-120 / 10 0 - 5 % Trimethylolpropane Trioleate (and) Laureth-2	0-5%						
0% of 100%	Cosmedia® SPL	Sodium Polyacrylate (and) Hydrogenated Polydecene (and) PPG-5 Laureth-5	0 - 5 %						
Disclaimer	Cosmedia® Triple C	Polyquaternium-37 (and) Dicaprylyl Carbonate (and) Lauryl Glucoside	0 - 5 %	-					
While the descriptions, designs, data and information contained herein an recommend that you make tests to determine the suitability of a product PARTICULAR PURPOSE ARE MADE REGARDING PRODUCTS DESCRIBED DESCRIPTIONS, INFORMATION, DATA OR DESIGNS PROVIDED BE CONSII	Dehydol® LS 2 Deo N Dehydol® LS 3 Deo N	Laureth-2 Laureth-3	0 - 5 % 0 - 5 %), INCLUDING WA	ors may affect processi ARRANTIES OF MERCH, IGHTS OF OTHERS. IN N n or www.carecreations	ANTABILITY OR FITNE			
	+ Add to Formulation C	ancel							





Flex Low 1,4-Dioxand Ingredients

←Start Over

Now formulating **Shampoo**

Chemical Name	Usage Quantity	Custom chemical	1,4-Dioxane Level	
BASF STANDARD SURFACTANTS	10	Chemical Name preservative	Predetermined	Swap ≒ ×
BASE SPECIALTY SURFACTANTS Dehyton® PK 45	5	Function Other	None	Swap ≒ ×
BASF RHEOLOGY MODIFIERS / THICKENERS	1	Usage Quantity	Predetermined	<u>Swap</u> ≒ ×
BASE CARE INGREDIENTS / CONDITIONING AGENT	0.2	1,4-Dioxane level ppm + Add to Formulation	None	<u>Swap</u> ≒ ×
BASF CARE INGREDIENTS / CONDITIONING AGENT	3	Cancel	None	<u>Swap</u>
BASF EMULSIFIERS Description Eumulgin® SML 20	1	% 0 - 10% suggested	Predetermined	<u>Swap</u> ≒ ×
OTHER Fragrance	0.6	%	0 ppm	D = BASF We create chemistry

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		Usage Quantity	ome Trends Benefits	Products	Formulations O Magazine Tools Contac	t 🔓 Logout 📿	} ≪ [#]
	BASE STANDARD SURFACTANTS Texapon® N 70 NA	0			Predetermined	<u>Swap</u> ⇔ ×	
	BASF SPECIALTY SURFACTANTS Dehyton® PK 45	0	%		None	Swap ≒ ×	
	BASF RHEOLOGY MODIFIERS / THICKENERS	0	Now adding DI Water DI Water	×	Predetermined	<u>Swap</u>	
	BASE CONDITIONING POLYMERS Dehyquart® GUAR N	0	+ Add to Formulation	%	None	<u>Swap</u> ≒ ×	
	BASE CARE INGREDIENTS / CONDITIONING AGENT Plantasil® Micro	0	Cancel		None	<u>Swap</u>	
	BASF EMULSIFIERS DEumulgin® SML 20	0			Predetermined	<u>Swap</u> ≒ ×	
	other	1			0 ppm	<u>Swap</u>	



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Vertex Ingredients

Welcome to the Care Creations[™] 1,4-Dioxane Calculator



←Start Over

Now formulating **Shampoo**

Chemical Name	Usage Quantity		1,4-Dioxane Level	
BASF STANDARD SURFACTANTS	10	%	Predetermined	$Swap \leftrightarrows \times$
BASE SPECIALTY SURFACTANTS Dehyton® PK 45	5	%	None	Swap ≒ ×
BASE RHEOLOGY MODIFIERS / THICKENERS	1	% 0 5% sug	gested Predetermined	<u>Swap</u>
BASE CONDITIONING POLYMERS	0.2	%	None	<u>Swap</u>
BASF CARE INGREDIENTS / CONDITIONING AGENT	3	%	None	We create chemistry

BASE EMULSIFIERS

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	Home Trends	Benefits Products	Formulations Magazine	Tools Contact	🔓 Logout	Q	<
BASE CONDITIONING POLYMERS Dehyquart GUAR N	0.2 %		None		Swap ≒	×	
BASF CARE INGREDIENTS / CONDITIONING AGENT Plantasil Micro	3 %		None		<u>Swap</u> ≒	×	
BASE EMULSIFIERS Eumulgin® SML 20	1 %	0 - 10% suggested	Predetermined		<u>Swap</u> ≒	×	
OTHER fragrance	0.6 %		0	ррт	<u>Swap</u> ≒	×	
other preservative	1 %		0	ppm	<u>Swap</u> ≒	×	
DI Water + Add BASF Chemical + Add Custom Chemical + Add D	79 %		None		<u>Swap</u> ≒	×	
100% USAGE TOTAL 100% of 100%	Please note: Formulation ingredients' usage equal	n can only be tested once Is exactly 100%		Test my form	nulation 🗸	I	

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BASE SPECIALTY SURFACTANTS Dehyton® PK 45		Home Trends Benefits Produ	cts Formulations Magazine	Tools Contact	🔒 Logout : 🗙 🍳	4
BASE RHEOLOGY MODIFIERS / THICH	CENERS 1	% 0 - 5% suggested	Predetermined	Replace	Swap ≒ ×	
BASE CONDITIONING POLYMERS	0.2	%	None		Swap 👄 🗙	
BASE CARE INGREDIENTS / CONDITI Plantasil® Micro	ONING AGENT	%	None		Swap 👄 🗙	
BASF EMULSIFIERS		nce only. Based on the entered parameters, the fo		e at levels	Swap ≒ ×	
OTHER fragrance	the formulation stability and/or perforr Information concerning the formulatio infringement, and is not a recommend	on is provided without representation or warranty lation to infringe any patent. It is the formulator's	that any such information is free of patent	eplace (∆ Swap 👄 ×	
OTHER peservative	not infringe on the Intellectual property o			eplace a	∆ <u>Swap</u> ⇔ ×	
DI Water	79	%	None		<u>Swap</u>	
+ Add BASF Chemical + Add Cust				n again		
				nagam	BASF We create chemistry	Flex Low lightedients
100% USAGE T 100% 0		ease note: Formulation can only be tested on gredients' usage equals exactly 100%	e	Test my formu	lation 🗸	



Now formulating

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Shampoo

Chemical Name	Usage Quantity		1,4-Dioxane Level			
BASF STANDARD SURFACTANTS Texapon® N 70 NA	10 %	6	Predetermined	Replac	e ▲ Swap ≒	×
BASE SPECIALTY SURFACTANTS Dehyton® PK 45	5 %	6	None		<u>Swap</u> ≒	×
BASE RHEOLOGY MODIFIERS / THICKENERS	1 9	6 0 - 5% suggested	Predetermined	Replac	e 🛦 Swap ≒	×
BASF CARE INGREDIENTS / CONDITIONING AGENT	0.2 %	6	None		<u>Swap</u> ≒	×
BASE CARE INGREDIENTS / CONDITIONING AGENT	3	6	None		<u>Swap</u> ≒	×
BASF EMULSIFIERS Description Eumulgin® SML 20	1 9	6 0 - 10% suggested	Predetermined	Replac	e 🚹 Swap ≒	×
OTHER Fragrance	0.6	6	0 p	opm	Swap ≒	×
other preservative	1 9	6	0 p		BASF eate chemistry	S F
DI Water	78.20 %	6	None		<u>Swap</u> ≒	×

Q

ex 1,4-Dioxane Ingredients Now formulatin

Shampoo

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Chemical Name	Usa	ge Quantity		1,4-Dioxane Level			
BASE STANDARD SURFACTANTS	10			Predetermined		Replace 🛕	<u>Swap</u> ×
BASE SPECIALTY SURFACTANTS Dehyton® PK 45	5	Suggested Star	ndard Surfacta	Ints Replacements ×			<u>Swap</u> ≒ ×
BASF RHEOLOGY MODIFIERS / THICKENERS	1	Material Name Plantapon® 611 L UP	Suggested Usage			Replace 🛦	<u>Swap</u>
BASE CARE INGREDIENTS / CONDITIONING AGENT	0.2	Standapol® ES-1 K Standapol® ES-2 K Standapol® ES-3 K					<u>Swap</u> ≒ ×
BASE CARE INGREDIENTS / CONDITIONING AGENT	3	Texapon® N 25 BZ Texapon® N 70 NA FlexGold					<u>Swap</u> ≒ ×
ASF EMULSIFIERS Eumulgin® SML 20	1	Texapon® N 70 NA FlexSilver Texapon® N 701 S		~		Replace 🛕	Swap ≒ ×
Fragrance	0.6	+ Swap Cancel			ppm		<u>Swap</u>
DTHER	1		%	0	0.0.00		
preservative			70	0	ppm		• BASF
I Water	78.	20		None			Swap 🛱 🗙 🗙

Care Che

Snampoo

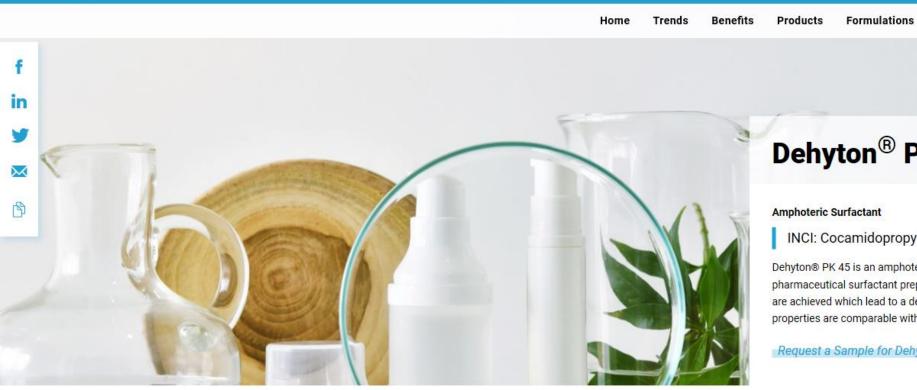
Q ·

Chemical Name		Usage Quantit	y	1,4-Dioxane	Level	
BASF STANDARD SURFACTANTS Texapon® N 70 NA F	lexGold	10		Predetermined		Swap 🖨 🗙
BASF SPECIALTY SURFACTANTS Dehyton® PK 45		5	%	None		<u>Swap</u>
BASF RHEOLOGY MODIFIERS / TH Arlypon® TT	Success!				×	<u>Swap</u> ≒ ×
BASF CARE INGREDIENTS / COND ① Dehyquart® GUAR	lower than 1ppm.	-	by this tool are aimed at reducing 1,	rs, the formulation is expected to contain 1,4 4-Dioxane levels. Please note that BASF is n		Swap 🖛 🗙
BASF CARE INGREDIENTS / COND Plantasil® Micro	infringement, and	is not a recommendation Intellectual property of oth	n to infringe any patent. It is the forr ers.	warranty that any such information is free on nulator's responsibility to ensure the propos		Swap 🖛 🗙
BASF EMULSIFIERS Eumulgin® SML 20		imake Some C		, gootaa		<u>Swap</u>
DTHER						
Fragrance		0.6		0	ppm	$Swap \leftrightarrows X$
DTHER						
preservative		1		0	D - B	
					We create o	
DI Water		78.20		None		Swap \Rightarrow X

Chemical Name	Usage Quantity	
BASE STANDARD SURFACTANTS Texapon® N 70 NA FlexGold	10.00%	Learn More → Request Sample �
BASE SPECIALTY SURFACTANTS Dehyton® PK 45	5.00%	Learn More → Request Sample 🏵
BASE RHEOLOGY MODIFIERS / THICKENERS Arlypon® TT	1.00%	Learn More → Request Sample 🏵
BASE CARE INGREDIENTS / CONDITIONING AGENT Dehyquart® GUAR N	0.20%	Learn More → Request Sample 🏵
BASE CARE INGREDIENTS / CONDITIONING AGENT Plantasil® Micro	3.00%	Learn More → Request Sample 🏵
BASF EMULSIFIERS Eumulgin® SML 20	1.00%	Learn More → Request Sample 父
other Fragrance	0.60%	
other preservative	1.00%	
DI Water	78.20%	
Email me a copy of my formulation This information is provided for guidance only. Based on the entered parame	ters, the formulation is expected to contain 1.4-Dioxane at levels lower t	than 1ppm. Products recommend

Hex

This information is provided for guidance only. Based on the entered parameters, the formulation is expected to contain 1,4-Dioxane at levels lower than 1ppm. Products recommend Dioxane levels. Please note that BASF is not responsible for the formulation stability and/or performance.



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Dehyton[®] PK 45

INCI: Cocamidopropyl Betaine

Dehyton® PK 45 is an amphoteric surfactant that is suitable for universal application in cosmetic and pharmaceutical surfactant preparations. In combination with anionic surfactants, synergistic effects are achieved which lead to a dermatological improvement of the consumer product. The application properties are comparable with the conventional Cocamidopropylbetaine-types.

Magazine

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Request a Sample for Dehyton[®] PK 45

Products > Dehyton® PK 45

Stories

Clean cleansing is socially responsible - and in high demand

Formulations

Cosmopolitan Shower Peel

Raise the Bar Solid Shampoo



q.

When you choose the lowest 1,4- Dioxane ingredient and still not be compliant because of the formulation usage %

Now formulating **Conditioner**

Chemical Name	Usage Quantity 1,4-Dioxane Le		.evel		
BASF STANDARD SURFACTANTS Texapon® N 70 NA FlexGold	40 %	Predetermined	Replace ▲ Swap ≒ ×		
	Please lower the usa percentage for this p		<u>Swap</u>		
BASF BIOACTIVE Actiwhite® PW LS 9860		n ouggeoteu - Hone	Swap ≒ ×		
+ Add BASF Chemical + Add Custom Chemic	al + Add DI Water				



Poll Question

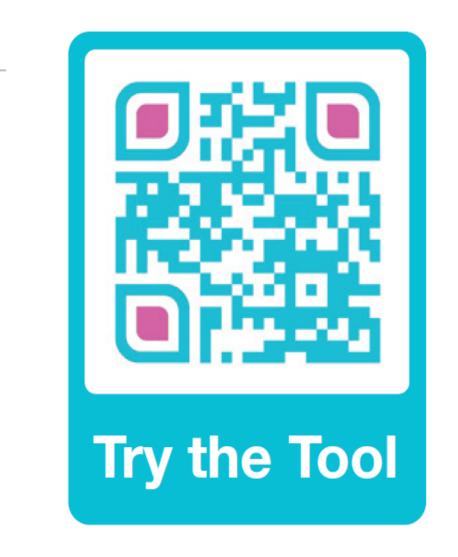
Will the 1,4 –Dioxane Calculator be useful for you/ your company?

1) Yes

2) No

3) Maybe





The Ingredient Insider Tool

Formulate for **Clean Beauty** with the **BASF Ingredient Insider Tool**. Access the top public chemical lists of clean ingredients all in one place.



For the Clean Beauty Formulator

This tool comes to assist scientists wishing to formulate in compliance with any of the industry lists below. Happy Formulating!



Clean at Sephora + Add List View Full List Details



Credo Clean Standard + Add List View Full List Details



Whole Foods + Add List View Full List Details - Hide Lists + Show All Lists

~

Sort Lists By...



Amazon Chemicals Policy



 Target Clean

 + Add List View Full List Details

RITE AID

+ Add List View Full List Details

Rite Aid



NPA Illustrative List A list of BASF products certified by NPA + Add List View Full List Details COSMOS NATURAL

COSMOS A list of BASF products certified by COSMOS

+ Add List View Full List Details



REACH SIN List

+ Add List View Full List Details



Campaign for Safe Cosmetics Red list

+ Add List View Full List Details



Chemicals of Concern + Add List View Full List Details



Cosmetic Ingredient Database (COSING) Annex II

+ Add List View Full List Details



Thank you



Fiex Low 1,4-Dioxane Ingredients

Email us at - <u>beautycare-na@basf.com</u> Our website - <u>https://carecreations.basf.us/</u> Link to 1,4-Dioxane Online Calculator - <u>https://carecreations.basf.us/dioxane-calculator</u>



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