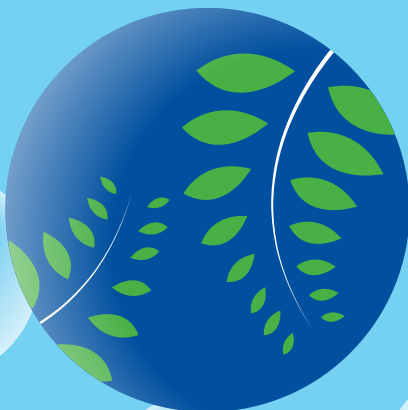


Delivering the future of **Clean**



BASF HOME CARE AND I&I
Flex Solutions for
Low 1,4-Dioxane Formulations



■ BASF

We create chemistry

 **Flex**
Formulation flexibility for low
1,4 - Dioxane requirements

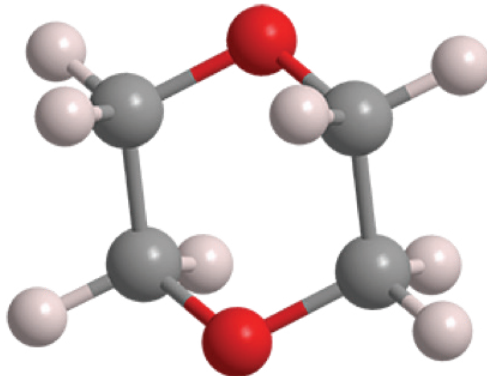
What is **Flex**? An Overview

Flex is BASF's market leading 1,4-Dioxane solution offering that helps you comply with finished formula limits ahead of the 12/31/22 deadline. Flex is a 3-part portfolio comprised of Low 1,4-Dioxane certified ingredients, efficiency-enhancing boosters to reduce the amount of 1,4-Dioxane containing ingredients in a formula, and ingredients not expected to contain 1,4-Dioxane. If you're not familiar with 1,4-Dioxane and the current market impact, review pages 2 – 4.

Background on 1,4-Dioxane and the Home Care and Industrial + Institutional Market

BACKGROUND: 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.



WHAT IS THE CONCERN ABOUT 1,4-DIOXANE?

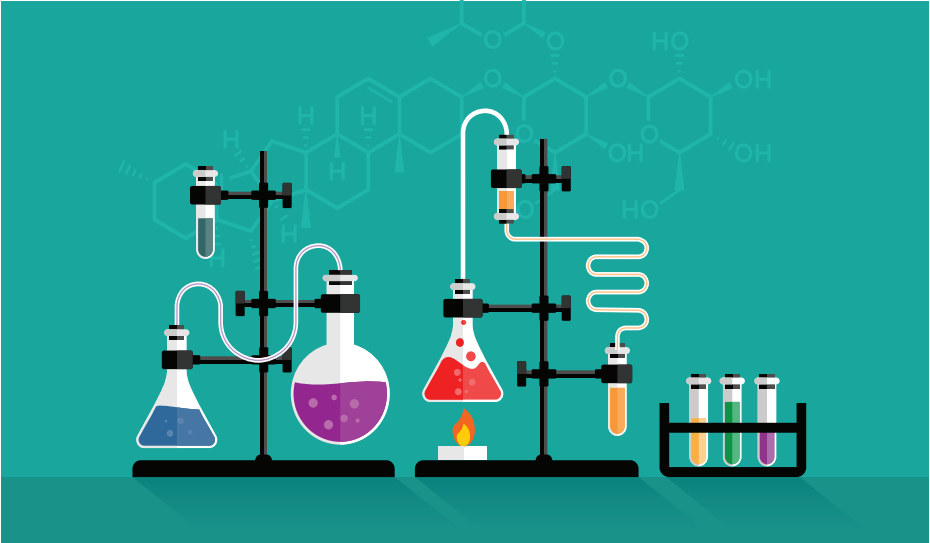
- EPA has classified 1,4-Dioxane as “likely to be carcinogenic to humans” by all routes of exposure (per EPA IRIS 2013).
- A 2016 report by the Department of Health and Human Services National Toxicology Program (NTP) found that 1,4-dioxane is “reasonably anticipated to be a human carcinogen based on sufficient evidence of carcinogenicity from studies in experimental animals”.
- The data available from human epidemiological studies cannot directly link human cancer and exposure to 1,4-dioxane.

https://www.epa.gov/sites/production/files/2014-03/documents/ffro_factsheet_contaminant_14-dioxane_january2014_final.pdf

<https://www.fda.gov/cosmetics/potential-contaminants-cosmetics/14-dioxane-cosmetics-manufacturing-byproduct>

1,4-DIOXANE IN THE NEWS

- 2016: the Environmental Protection Agency (EPA) found ≥ 1 ppb levels of 1,4-Dioxane in groundwater in New York; highest levels are in Long Island.
- EPA risk assessments indicate that the drinking water concentration representing a 1×10^{-6} cancer risk level for 1,4-dioxane is 0.35 $\mu\text{g/L}$ (0.35 ppb) (EPA IRIS 2013).
- No federal maximum contaminant level (MCL) for drinking water has been established (EPA 2012). NY State Department of Health working on establishing an MCL for 1,4-dioxane in drinking water.



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NY STATE GOVERNOR SIGNED LEGISLATURE BILL TARGETING HOME CARE, I&I, + 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.
- NY State Governor Cuomo signed the Bill on December 9, 2019.
- Minor technical amendments to the Bill are expected to be disclosed in early 2020.

NY Bill 1,4-Dioxane Limit Restrictions Summarized

Household Cleaning Products (includes I&I)

- 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”

ADDITIONAL CALIFORNIAL LEGAL COMPLEXITIES FACE HOME, I&I, AND PERSONAL CARE PRODUCTS

Safer Consumer Products Evaluation

- State Department of Toxic Substances Control (DTSC) is assessing 1,4-Dioxane in HC and PC product(s) through Safer Consumer Products program
- Public comment period closed August 30, 2019
- Estimated to be completed in ~3 years

How do I know if **Flex** is Right for Me?

**ANY HOME OR I&I PRODUCT SOLD IN NEW YORK
MUST COMPLY WITH *FINISHED FORMULA* LIMITS BY
12/31/22**



**Does your formula
contain 1,4-Dioxane?**



Common 1,4-Dioxane Containing Ingredients

- Alkyl ether sulfates
- Glycol distearates + blends
- PEGs
- PEG-derivatized castor oils
- Ethoxylated alcohols
- Fatty alcohol mixed with ethoxylates



**Unlock the power of
portfolio options!**



**Low 1,4-Dioxane certified
Flex ingredients**



**Efficiency-enhancing
boosters**



**Ingredients not
expected to contain
1,4-Dioxane**

**BASF IS THE MARKET LEADER IN LOW
1,4-DIOXANE SOLUTIONS**

The Flex Portfolio



LOW 1,4-DIOXANE CERTIFIED INGREDIENTS

New alternatives to existing products offer *guaranteed* low 1,4-Dioxane levels, certified at batch level on every COA

Market	PRD Name	Previously Communicated 1,4-Dioxane Limit	1,4-Dioxane FLEX Specification Limit (ppm)
Home Care I&I	Pluriol® E 8000 E FLEX	Not listed on CoA	1
	Pluriol® E 600 LS FLEX	Not listed on CoA	1
	Pluriol® E 400 LS FLEX	Not listed on CoA	1
	Lutensol® TDA 3 FLEX	<25 ppm per Proposition 65 statement	3
	Lutensol® TDA 9 FLEX	<10 ppm per Proposition 65 statement	2
	Lutensol® XL 90 FLEX	<20 ppm per Proposition 65 statement	2
	Dehypon® LS 54 FLEX	<20 ppm per Proposition 65 statement	1
Standard Surfactants	Plurafac® SLF 180 FLEX	Current Proposition 65 states not detected at 1ppm detection limit	1
	Texapon® N 70 NA FlexGold	N/A	5
	Texapon® N 70 NA FlexSilver	N/A	10

BASF LAUNCHES THE FIRST OF MANY *Flex* PRODUCTS FOR FORMULATION *Flex*IBILITY WITH MORE TO BE LAUNCHED SOON



EFFICIENCY-ENHANCING BOOSTERS

Manual dish boosters:

- Sokalan® HP 20
- Sokalan® HP 96
- Pluronic® F 68

Laundry boosters:


- Sokalan® HP 20
- Sokalan® HP 96
- Sokalan® HP 22 G
- Trilon® P



PORTFOLIO OF INGREDIENTS NOT EXPECTED TO CONTAIN 1,4-DIOXANE

Product Name	Safer Choice
APG® 325 N	
Glucopon® 215 UP	
Glucopon® 225 DK	
Glucopon® 420 UP	
Glucopon® 425 N	
Glucopon® 50 G	
Glucopon® 600 UP	
Glucopon® 625 UP	
Comperlan® 100 NA	
Comperlan® CMEA NA	
Comperlan® COD	
Comperlan® IP	
Dehyquart® CSP	
Dehyton® AB 30	
Dehyton® KE UP	
Dehyton® MC	
Dehyton® ML NA	
Dehyton® PK 35	
Dehyton® PK 45	
Deriphat® 160 C	
Larostat® 264 A	
Plantatex® HCC	
Polyquart® PN 60	
Polyquart® 149	
Polyquart® Pro A	
Polyquart® Ecoclean	
Sokalan® HP 50	

Product Name	Safer Choice
Sokalan® HP 56 K	
Sokalan® HP 56 Gran.	
Sokalan® HP 165	
Sokalan® K 17 P	
Sokalan® K 90 P	
Rheovis® TTA	
Sokalan® CP 5	
Sokalan® CP 5 Gran.	
Sokalan® CP 7	
Sokalan® CP 7 Gran. NL	
Sokalan® CP 9	
Sokalan® CP 10	
Sokalan® CP 10 S	
Sokalan® CP 12 S	
Sokalan® PA 15	
Sokalan® PA 25 CL Gran.	
Sokalan® PA 30 CL	
Sokalan® PA 30 CL Gran.	
Sokalan® PA 30 CL PN GR.	
Sokalan® PA 40	
Lupasol® HF	
Lupasol® FG	
Lupasol® G 20	
Lupasol® G 20 Waterfree	
Lupasol® G 100	
Lupasol® P	
Lupasol® PR 8515	
Lupasol® PS	
Lupasol® WF	

Product Name	Safer Choice
Trilon® B LQ.	
Trilon® B Powder NA	
Trilon® BS PWD.	
Trilon® BX LQ.	
Trilon® BX PWD.	
Trilon® M LQ.	
Trilon® M Granules SG	
Trilon® A LQ.	
Trilon® BAD LQ.	
Trilon® BAQ LQ.	
Trilon® BD	
Trilon® BFA LQ.	
Trilon® BMN 6 LQ.	
Trilon® C liquid	
Trilon® C liquid 50%	
Trilon® CA Food Grade	
Trilon® D liquid	
Trilon® NA Food Grade	
Trilon® P LQ.	
Myacide® AS Technical	
Myacide® GDA Technical	
Myacide® AS Plus	
Myacide® S 30	
Myacide® S 15	
Myacide® GA 50	
Protectol® GA 50	
Protectol® PE NA	
Lavergy™ Pro 104 L	
Lavergy™ Pro 104 LS	

What's Next?

Reach out to your account manager for more details

Email detergents-cleaners-na@basf.com

Go to hcai.basf.us/flex for more content



We create chemistry

Disclaimer

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No warranties of any kind, either express or implied, including warranties of merchantability or fitness for a particular purpose, are made regarding products described or designs, data or information set forth, or that the products, designs, data or information may be used without infringing the intellectual property rights of others. In no case shall the descriptions, information, data or designs provided be considered a part of our terms and conditions of sale.

Safety

We know of no ill effects that could have resulted from using our products for the purpose for which they are intended and from processing them in accordance with current practice. According to the experience we have gained up to now and other information at our disposal, our products do not exert any harmful effects on health, provided that they are used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our safety data sheet are observed.

Labeling

Details about the classification and labeling of our products and further advice on safe handling are contained in the current safety data sheets.

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TM = Trademark of BASF

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