

Section 11. Toxicological information

1,1'-phenyliminodipropan-2-ol Severely irritating to eyes.
 2-Ethyl-1,3-hexanediol Amine based tetrol Severely irritating to eyes.
 Irritating to eyes.
 1,2-diaminocyclohexane Severely corrosive to the eyes.
 Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid Non-irritating to the eyes.
 ((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate No additional information.

Respiratory :

1,1'-phenyliminodipropan-2-ol No additional information.
 2-Ethyl-1,3-hexanediol No additional information.
 Amine based tetrol No additional information.
 1,2-diaminocyclohexane No additional information.
 Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid No additional information.
 ((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate No additional information.

Sensitization

Product/ingredient name	Test	Route of exposure	Species	Result
1,2-diaminocyclohexane	-	skin	Guinea pig	Sensitizing
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	-	skin	Guinea pig	Not sensitizing
((1,2,2,6,6-pentamethyl), methyl-4-piperidiny) sebacate	-	skin	Guinea pig	Sensitizing

Mutagenicity

Product/ingredient name	Test	Result
1,2-diaminocyclohexane	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Animal Metabolic activation: +/-	Negative
	Experiment: In vitro Subject: Mammalian-Human Metabolic activation: +/-	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
	Experiment: In vivo Subject: Mammalian-Animal	Negative
Bis (1,2,2,6,6,-pentamethyl-4-piperidiny) ester of decanedioic acid	Experiment: In vitro Subject: Bacteria Metabolic activation: +/-	Negative

Conclusion/Summary :

Section 11. Toxicological information

2-Ethyl-1,3-hexanediol	Not mutagenic in a standard battery of genetic toxicological tests.
Amine based tetrol	Not mutagenic in a standard battery of genetic toxicological tests.
1,2-diaminocyclohexane	Not mutagenic in a standard battery of genetic toxicological tests.

Carcinogenicity

Not available.

Reproductive toxicity

Product/ingredient name	Test	Species	Maternal toxicity	Fertility	Developmental effects
Amine based tetrol	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Rat - Male, Female	Negative	Negative	Negative
1,2-diaminocyclohexane	OECD 416 Two-Generation Reproduction Toxicity Study	Rat - Male, Female	Negative	Negative	Negative

Conclusion/Summary :

1,2-diaminocyclohexane No known significant effects or critical hazards.

Teratogenicity

Product/ingredient name	Test	Species	Result/Result type
2-Ethyl-1,3-hexanediol	-	Rat - Female	Positive - Dermal
Amine based tetrol	-	Rat - Female	Negative - Oral
1,2-diaminocyclohexane	-	Rat - Female	Negative - Oral
	OECD 414 Prenatal Developmental Toxicity Study	Rat - Male, Female	Negative - Oral

Conclusion/Summary :

1,2-diaminocyclohexane No known significant effects or critical hazards.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
1,2-diaminocyclohexane	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Section 11. Toxicological information

Information on the likely routes of exposure : Not available.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : May cause burns to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : No specific data.
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
- Ingestion** : Adverse symptoms may include the following:
stomach pains

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

Product/ingredient name	Test	Endpoint	Species	Result
2-Ethyl-1,3-hexanediol	-	Sub-acute LOAEL Oral	Rat - Male, Female	100 mg/kg
	-	Sub-chronic NOAEL Oral	Rat	480 mg/kg
	-	Sub-chronic NOAEL Dermal	Rat - Male, Female	3768 mg/kg
Amine based tetrol	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-acute NOAEL Oral	Rat - Male, Female	1000 mg/kg/d

Section 11. Toxicological information

1,2-diaminocyclohexane	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-acute NOAEL Oral	Rat - Male, Female	300 mg/kg/d
	OECD 422 Combined Repeated Dose Toxicity Study with the Reproduction/ Developmental Toxicity Screening Test	Sub-chronic NOAEL Oral	Rat - Male, Female	150 mg/kg/d
	OECD 413 Subchronic Inhalation Toxicity: 90-day Study	Sub-chronic NOEC Inhalation Dusts and mists	Rat - Male, Female	16 mg/m ³

General : No known significant effects or critical hazards.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	22291.5 mg/kg
Dermal	140961.9 mg/kg
Inhalation (dusts and mists)	92.34 mg/l

Other information : Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Test	Endpoint	Exposure	Species	Result
Amine based tetrol	EU EC C.3 Algal Inhibition Test	Acute EC50	72 hours	Algae	150.67 mg/l
	EU EC C.2 Acute Toxicity for Daphnia	Acute IC0	48 hours	Daphnia	>100 mg/l
	DIN DIN 38412 Part 15	Acute LC50	48 hours	Fish	2700 mg/l
	DIN DIN 38412 Part 15	Acute LC50	96 hours	Fish	4600 mg/l
	-	Chronic NOEC	3 hours	Bacteria	700 mg/l
	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic NOEC	21 days	Daphnia	10 mg/l
	EU EC C.3 Algal Inhibition Test	Chronic NOECr	72 hours	Algae	4.25 mg/l

Section 12. Ecological information

1,2-diaminocyclohexane	-	Acute	EC50	72 hours	Algae	29.6	mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute	EC50	48 hours	Daphnia	19.8	mg/l
	DIN DIN 38412 Part 15	Acute	LC50	48 hours	Fish	200	mg/l
	No official guidelines	Chronic	EC10	20 hours	Bacteria	12500	mg/l
Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid	OECD 211 <i>Daphnia Magna</i> Reproduction Test	Chronic	NOEC	21 days	Daphnia	4.16	mg/l
	OECD 201 Alga, Growth Inhibition Test	Chronic	NOECb	72 hours	Algae	3.2	mg/l
	OECD 209 Activated Sludge, Respiration Inhibition Test	Acute	EC50	3 hours	Bacteria	>100	mg/l
	OECD 202 <i>Daphnia</i> sp. Acute Immobilisation Test	Acute	EC50	24 hours	Daphnia	20	mg/l
	OECD 203 Fish, Acute Toxicity Test	Acute	LC50	96 hours	Fish	0.97 to 1	mg/l

Conclusion/Summary : 1,2-diaminocyclohexane Not toxic or harmful to aquatic organisms.

Persistence and degradability

Product/ingredient name	Test	Period	Result
Amine based tetrol	OECD 302B Inherent Biodegradability: Zahn-Wellens/EMPA Test	28 days	36 %
	EU	28 days	9 %
1,2-diaminocyclohexane	OECD 301D Ready Biodegradability - Closed Bottle Test	17 days	101 %
Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid	OECD 301E Ready Biodegradability - Modified OECD Screening Test	28 days	38 %

Conclusion/Summary : Amine based tetrol Inherently biodegradable
1,2-diaminocyclohexane Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Amine based tetrol	Fresh water days	-	Not readily
1,2-diaminocyclohexane	Fresh water days	-	Readily
Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid	Fresh water >182 days	-	Not readily
((1,2,2,6,6-pentamethyl), methyl-4-piperidinyl) sebacate	Fresh water >182 days	-	-

Bioaccumulative potential

Section 12. Ecological information

Product/ingredient name	LogP _{ow}	BCF	Potential
Amine based tetrol	-2.08	-	low
1,2-diaminocyclohexane	<-0.9	3.162	low
Bis (1,2,2,6,6,-pentamethyl-4-piperidinyl) ester of decanedioic acid	0.37	75.39	low
((1,2,2,6,6-pentamethyl), methyl-4-piperidinyl) sebacate	-	75.39	low

Mobility in soil

Not available.

Other adverse effects : No known significant effects or critical hazards.

Other ecological information

BOD5 : Not determined.

COD : Not determined.

TOC : Not determined.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14. Transport information

Proper shipping name

DOT : Not regulated.

TDG : Not regulated.

IMDG : Not regulated.

IATA : Not regulated.

Section 14. Transport information

Regulatory information	UN number	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-		-
TDG Classification	Not regulated.	-	-		-
IMDG Classification	Not regulated.	-	-		-
IATA Classification	Not regulated.	-	-		-

PG* : Packing group

Section 15. Regulatory information

Safety, health and environmental regulations specific for the product

United States Regulations

- TSCA 8(b) inventory** : All components are listed or exempted.
- TSCA 5(a)2 final significant new use rule (SNUR)** : No ingredients listed.
- TSCA 5(e) substance consent order** : No ingredients listed.
- TSCA 12(b) export notification** : No ingredients listed.
- SARA 311/312** : Immediate (acute) health hazard
- Clean Air Act - Ozone Depleting Substances (ODS)** : This product does not contain nor is it manufactured with ozone depleting substances.
- SARA 313** : No ingredients listed.

	<u>Ingredient name</u>	<u>%</u>	<u>Section 304 CERCLA Hazardous Substance</u>	<u>CERCLA Reportable Quantity (Lbs)</u>	<u>Product Reportable Quantity (Lbs)</u>
CERCLA Hazardous substances	1,3-butadiene	0.000301471488	Listed	10	3317063
	blue powder; c.i. 77945; c.i. pigment black 16; c.i. pigment metal 6; emanay zinc dust; granular zinc; jasad; zinc dust; zinc powder	0.000042982368	Listed	1000	2326535383

Section 15. Regulatory information

Arsenic and compounds	0.000019838016	Listed	1	5040827
nickel	0.0000128947104	Listed	100	775511794
Chromium (metal)	0.000002479752	Listed	5000	201633066532
Copper.	0.0000013225344	Listed	5000	378061999748

State regulations

PENNSYLVANIA - RTK : silicic acid, aluminum potassium sodium salt, Limestone

California Prop 65 : **WARNING:** This product contains less than 0.1% of a chemical known to the State of California to cause cancer.
WARNING: This product contains less than 1% of a chemical known to the State of California to cause birth defects or other reproductive harm.

<u>Ingredient name</u>	<u>Cancer</u>	<u>Reproductive</u>
4-vinylcyclohexene	Yes.	Yes.
1,3-butadiene	Yes.	Yes.
Arsenic and compounds	Yes.	No.
nickel	Yes.	No.

Canadian regulations

CEPA DSL : Not determined.

WHMIS Classes : Class D-2B: Material causing other toxic effects (Toxic).
Class E: Corrosive material

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Brazil Regulations

Classification system used : Norma ABNT-NBR 14725-2:2012

International lists

Australia inventory (AICS): All components are listed or exempted.
China inventory (IECSC): All components are listed or exempted.
Japan inventory: At least one component is not listed.
Korea inventory: All components are listed or exempted.
Malaysia Inventory (EHS Register): Not determined.
New Zealand Inventory of Chemicals (NZIoC): At least one component is not listed.
Philippines inventory (PICCS): Not determined.
Taiwan inventory (CSNN): Not determined.

Section 16. Other information

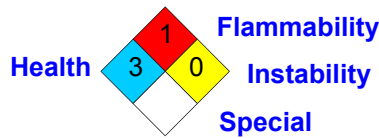
**Hazardous Material
Information System (U.S.A.)** :

Health	*	3
Flammability		1
Physical hazards		0
Personal protection		

The customer is responsible for determining the PPE code for this material.

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on SDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

**National Fire Protection
Association (U.S.A.)** :



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Further information :
Date of printing : 1/11/2015.
Date of issue : 1/11/2015.
Date of previous issue : 9/6/2013.
Version : 4

▣ Indicates information that has changed from previously issued version.

Notice to reader

While the information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent

Section 16. Other information

upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE. NO PART OF THIS DATA SHEET MAY BE REPRODUCED OR TRANSMITTED IN ANY FORM, OR BY ANY MEANS, WITHOUT PERMISSION IN WRITING FROM HUNTSMAN. ALL REQUESTS FOR PERMISSION TO REPRODUCE MATERIAL FROM THIS DATA SHEET SHOULD BE DIRECTED TO HUNTSMAN, MANAGER, PRODUCT SAFETY AT THE ABOVE ADDRESS.