

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

SECTION 1. IDENTIFICATION

Product name : JEFFCAT® ZF-24

Manufacturer or supplier's details

Company name of supplier : Huntsman International LLC
Address : P.O. Box 4980

The Woodlands,
TX 77387
United States of America

Telephone : TechInfo: (281) 719-7780

E-mail address of person responsible for the SDS : MSDS@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Component of a Polyurethane System.

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Acute toxicity (Dermal) : Category 4

Skin corrosion : Category 1B

Serious eye damage : Category 1

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H312 Harmful in contact with skin.
H314 Causes severe skin burns and eye damage.

Precautionary statements : **Prevention:**
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P363 Wash contaminated clothing before reuse.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
Bis(dimethylaminoethyl) ether	3033-62-3	13 - 30

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
- If inhaled : If unconscious place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
Take victim immediately to hospital.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Protect unharmed eye.

JEFFCAT® ZF-24

Version 1.0	Revision Date: 08/15/2016	SDS Number: 400001001148	Date of last issue: - Date of first issue: 08/15/2016
----------------	------------------------------	-----------------------------	--

	Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
If swallowed	: Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.
Most important symptoms and effects, both acute and delayed	: None known.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media	: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media	: High volume water jet
Specific hazards during firefighting	: Do not allow run-off from fire fighting to enter drains or water courses.
Hazardous combustion products	: No hazardous combustion products are known
Specific extinguishing methods	: No data is available on the product itself.
Further information	: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Special protective equipment for firefighters	: Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: No action shall be taken involving any personal risk or without suitable training. Use personal protective equipment. Evacuate personnel to safe areas. Ensure adequate ventilation. In case of inadequate ventilation wear respiratory protection.
Environmental precautions	: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

JEFFCAT® ZF-24

Version 1.0	Revision Date: 08/15/2016	SDS Number: 400001001148	Date of last issue: - Date of first issue: 08/15/2016
----------------	------------------------------	-----------------------------	--

Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapours/dust.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Observe label precautions.
Electrical installations / working materials must comply with the technological safety standards.

Materials to avoid : Keep away from oxidizing agents.
Keep away from strong acids.
Keep away from strong bases.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Bis(dimethylaminoethyl) ether	3033-62-3	TWA	0.05 ppm	ACGIH
		STEL	0.15 ppm	ACGIH

Personal protective equipment

Hand protection

Remarks

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties.
It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.
In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Eye protection

: Safety eyewear complying with an approved standard should

JEFFCAT® ZF-24

Version 1.0	Revision Date: 08/15/2016	SDS Number: 400001001148	Date of last issue: - Date of first issue: 08/15/2016
----------------	------------------------------	-----------------------------	--

be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection:
Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.
Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection	: Impervious clothing Choose body protection according to the amount and concentration of the dangerous substance at the work place. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Hygiene measures	: When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: colourless
Odour	: amine-like
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Melting point	: < -40 °C
Boiling point	: 204 °C
Flash point	: 93.4 °C Method: closed cup
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Flammability (liquids)	: No data is available on the product itself.
Upper explosion limit	: No data is available on the product itself.
Lower explosion limit	: No data is available on the product itself.
Vapour pressure	: No data is available on the product itself.
Relative vapour density	: 1

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Relative density	: 0.98
Density	: No data is available on the product itself.
Solubility(ies)	
Water solubility	: No data is available on the product itself.
Solubility in other solvents	: No data is available on the product itself.
Partition coefficient: n-octanol/water	: No data is available on the product itself.
Auto-ignition temperature	: No data is available on the product itself.
Thermal decomposition	: No data is available on the product itself.
Self-Accelerating decomposition temperature (SADT)	: No data is available on the product itself.
Viscosity	
Viscosity, kinematic	: 37 mm ² /s (25 °C)

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: No dangerous reaction known under conditions of normal use.
Chemical stability	: Stable under normal conditions.
Possibility of hazardous reactions	: No decomposition if stored and applied as directed.
Conditions to avoid	: No data available
Hazardous decomposition products	: Carbon dioxide (CO ₂) Carbon monoxide Nitrogen oxides (NO _x)

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure	: No data is available on the product itself.
Acute toxicity	
Acute oral toxicity - Product	: Acute toxicity estimate : 2,664 mg/kg Method: Calculation method
Acute inhalation toxicity - Product	: Acute toxicity estimate: 13.12 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Expert judgement Assessment: The substance or mixture has no acute inhalation toxicity
Acute dermal toxicity - Product	: Acute toxicity estimate : 1,374 mg/kg Method: Calculation method

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation**Product:**

Remarks: Extremely corrosive and destructive to tissue.

Serious eye damage/eye irritation**Product:**

Remarks: May cause irreversible eye damage.

Respiratory or skin sensitisation**Components:**

Bis(dimethylaminoethyl) ether:
Exposure routes: Skin
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

Assessment: No data available

Germ cell mutagenicity**Components:**

Bis(dimethylaminoethyl) ether:
Genotoxicity in vitro : Concentration: .08 - .18 mg/ml
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 479
Result: Not classified due to inconclusive data.

Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Components:

Bis(dimethylaminoethyl) ether:
Genotoxicity in vivo : Application Route: Intraperitoneal injection
Dose: 45 - 145 mg/kg
Method: OECD Test Guideline 474
Result: negative

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Carcinogenicity

No data available

Carcinogenicity - Assessment : No data available

IARC

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity

Effects on fertility : No data available

Components:Bis(dimethylaminoethyl) ether:
Effects on foetal development: Species: Rabbit
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level:
>= 12 mg/kg body weight
Method: OECD Test Guideline 414
Result: Teratogenic effects

Reproductive toxicity - Assessment : No data available

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity**Components:**Bis(dimethylaminoethyl) ether:
Species: Rat, male and female
NOEC: 8.2 mg/m³
Application Route: Ingestion
Test atmosphere: vapour
Exposure time: 336 h
Number of exposures: 6 h
Method: Subacute toxicity

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Repeated dose toxicity - Assessment : No data available

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information**Product:**

Remarks: No data available

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:**

Bis(dimethylaminoethyl) ether:
Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): ca. 131.2 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Components:

Bis(dimethylaminoethyl) ether:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 102 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Components:

Bis(dimethylaminoethyl) ether:

Toxicity to algae : ErC50 (Selenastrum capricornutum (green algae)): 24 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : No data available

Toxicity to fish (Chronic toxicity) : No data available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : No data available

M-Factor (Chronic aquatic toxicity) : No data available

Toxicity to bacteria : No data available

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment
Acute aquatic toxicity : No data available

Components:

Bis(dimethylaminoethyl) ether:

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

Further information:
No data available

Persistence and degradability**Components:**

Bis(dimethylaminoethyl) ether:

Biodegradability : Inoculum: activated sludge

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Result: Inherently biodegradable.
 Biodegradation: < 10 %
 Exposure time: 28 d
 Method: OECD Test Guideline 302B

Inoculum: activated sludge
 Result: Not readily biodegradable.
 Biodegradation: 2 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301F

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

BOD/COD : No data available

ThOD : No data available

BOD/ThOD : No data available

Dissolved organic carbon (DOC) : No data available

Physico-chemical removability : No data available

Components:

Bis(dimethylaminoethyl) ether:
 Stability in water : Method: No information available.
 GLP: No information available.
 Remarks: see user defined free text

Photodegradation : No data available

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**

Bis(dimethylaminoethyl) ether:
 Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Components:

Bis(dimethylaminoethyl) ether:
 Partition coefficient: n-octanol/water : log Pow: -0.34 (20 °C)
 Method: Partition coefficient

Mobility in soil

SAFETY DATA SHEET

HUNTSMAN

Enriching lives through innovation

JEFFCAT® ZF-24

Version 1.0	Revision Date: 08/15/2016	SDS Number: 400001001148	Date of last issue: - Date of first issue: 08/15/2016
----------------	------------------------------	-----------------------------	--

Mobility : No data available

Distribution among environmental compartments : No data available

Stability in soil : No data available

Other adverse effects

Environmental fate and pathways : No data available

Results of PBT and vPvB assessment : No data available

Endocrine disrupting potential : No data available

Adsorbed organic bound halogens (AOX) : No data available

Hazardous to the ozone layer

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information - Product : No data available

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

SECTION 14. TRANSPORT INFORMATION

International Regulation

SAFETY DATA SHEET

HUNTSMAN

Enriching lives through innovation

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

IATA

UN/ID No.	: UN 2735
Proper shipping name	: Amines, liquid, corrosive, n.o.s. (Bis(dimethylaminoethyl) ether)
Class	: 8
Packing group	: II
Labels	: Corrosive
Packing instruction (cargo aircraft)	: 855
Packing instruction (passenger aircraft)	: 851

IMDG

UN number	: UN 2735
Proper shipping name	: AMINES, LIQUID, CORROSIVE, N.O.S. (Bis(dimethylaminoethyl) ether)
Class	: 8
Packing group	: II
Labels	: 8
EmS Code	: F-A, S-B
Marine pollutant	: no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

DOT Classification

UN/ID/NA number	: UN 2735
Proper shipping name	: AMINES, LIQUID, CORROSIVE, N.O.S. (Bis(dimethylaminoethyl) ether)
Class	: 8
Packing group	: II
Labels	: CORROSIVE
ERG Code	: 153
Marine pollutant	: no

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

SARA 311/312 Hazards : Acute Health Hazard

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

JEFFCAT® ZF-24

Version 1.0	Revision Date: 08/15/2016	SDS Number: 400001001148	Date of last issue: - Date of first issue: 08/15/2016
----------------	------------------------------	-----------------------------	--

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

The components of this product are reported in the following inventories:

CH INV	: The formulation contains substances listed on the Swiss Inventory, On the inventory, or in compliance with the inventory
TSCA	: On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: On the inventory, or in compliance with the inventory

Inventories

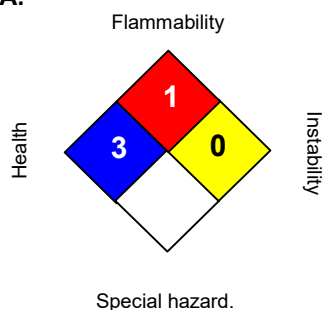
AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

TSCA - 5(a) Significant New Use Rule List of Chemicals

No substances are subject to a Significant New Use Rule.

US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION**Further information****NFPA:****HMIS III:**

HEALTH	3
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,

2 = Moderate, 3 = High

4 = Extreme, * = Chronic

JEFFCAT® ZF-24

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	08/15/2016	400001001148	Date of first issue: 08/15/2016

Revision Date : 08/15/2016

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 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.

The trademarks above are the property of Huntsman Corporation or an affiliate thereof.

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.