

505122 FURFURAL NATURAL

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1. IDENTIFICATION Product Description: FURFURAL NATURAL CAS # 98-01-1 **FEMA Number** 2489 Other means of identification Vigon Item # 505122 Recommended use Concentrated aromatic and flavor ingredient which may be used in flavor and fragrance compounds according to legal and IFRA or FEMA GRAS/FDA guidelines. **Recommended restrictions** For Manufacturing Use Only 24 Hour Emergency Response Information Company Vigon International, LLC INFOTRAC (ACCT# 78928); 1-800-535-5053 WITHIN THE U.S.A. 127 Airport Road 1-352-323-3500 OUTSIDE THE U.S.A. E. Stroudsburg, PA 18301 For information call: 570-476-6300 Web Site: www.vigon.com Manufacturer/Importer/Supplier/Distributor information Manufacturer Company name Vigon International, LLC Address 127 Airport Road E. Stroudsburg, PA 18301 United States Telephone For information call: 570-476-6300 Website www.vigon.com E-mail regulatory@vigon.com Emergency phone number **INFOTRAC** (ACCT# 78928); 1-800-535-5053 WITHIN THE U.S.A. 1-352-323-3500 OUTSIDE THE U.S.A. 2. HAZARD(S) IDENTIFICATION Physical hazards Flammable liquids Category 3 Health hazards Acute toxicity, oral Category 3 Acute toxicity, dermal Category 4 Acute toxicity, inhalation Category 2 Skin corrosion/irritation Category 2 Serious eye damage/eye irritation Category 2A Carcinogenicity Category 2 Specific target organ toxicity, single exposure Category 3 respiratory tract irritation

Hazardous to the aquatic environment, acute

hazard

Category 3

Environmental hazards



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	Hazardous to the aquatic environment, Category 3 long-term hazard
Label elements	
Signal word	Danger
Hazard statement	Flammable liquid and vapor. Toxic if swallowed. Harmful in contact with skin. Causes skin irritation. Causes serious eye irritation. Fatal if inhaled. May cause respiratory irritation. Suspected of causing cancer. Harmful to aquatic life. Harmful to aquatic life with long lasting effects.
Precautionary statement	
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep container tightly closed. Keep cool. Ground and bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use non-sparking tools. Take action to prevent static discharges. Do not breathe vapor. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Avoid release to the environment. Wear protective gloves/protective clothing/eye protection/face protection/hearing protection. Wear respiratory protection.
Response	IF SWALLOWED: Immediately call a POISON CENTER/doctor. Rinse mouth. IF ON SKIN: Wash with plenty of water. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Specific treatment is urgent (see this label). If skin irritation occurs: Get medical advice/attention. If eye irritation persists: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. In case of fire: Use appropriate media to extinguish.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	After prolonged contact with highly porous materials, this product may spontaneously combust.
Supplemental information	None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substances



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Chemical name	Common name and synonyms	CAS number	%
FURFURAL	PYROCIC ALDEHYDE 2-Furancarboxaldehyde furan-2-carbaldehyde 2-Oxomethylfuran FURFUROL FURAL	98-01-1	100
4. FIRST-AID MEASURES			
Inhalation	If breathing is difficult, remove to fresh air an For breathing difficulties, oxygen may be neo persist.		-
Skin contact	Take off immediately all contaminated clothin persists. Wash skin thoroughly with soap and	-	on develops and
Eye contact	Remove contact lenses, if present and easy persists. Promptly wash eyes with plenty of v		tation develops and
Ingestion	Call a physician or poison control center imm the person is conscious). Do not induce vom so that stomach vomit doesn't enter the lung	iting. If vomiting occurs, the head	
Most important symptoms/effects, acute and delayed	Headache. Severe eye irritation. Symptoms blurred vision. May cause respiratory irritatio		-
Indication of immediate medical attention and special treatment needed	Not available.		
General information	Ensure that medical personnel are aware of protect themselves. Show this safety data sh		eprecautions to
5. FIRE-FIGHTING MEASU	IRES		
Suitable extinguishing media	Water spray, fog, CO2, dry chemical, or alco	hol resistant foam.	
Unsuitable extinguishing media	Do not use a solid water stream as it may sc	atter and spread fire.	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or insulation, or organic clay may spontaneous	-	
Special protective equipment and precautions for firefighters	Firefighters must use standard protective eq face shield, gloves, rubber boots, and in enc clothing will only provide limited protection. V facepiece operated in the positive pressure of	losed spaces, SCBA. Structural f Vear self-contained breathing app	irefighters protective paratus with a full
Fire fighting equipment/instructions	In case of fire and/or explosion do not breath consider the hazards of other involved mater without risk. Water runoff can cause environ entering them. Keep run-off water out of sew	rials. Move containers from fire an mental damage. Ventilate closed	rea if you can do so spaces before
Specific methods	Use water spray to cool unopened container	S.	
General fire hazards	Static charges generated by emptying packa	age in or near flammable vapor m	ay cause flash fire.



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6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Eliminate all sources of ignition. Avoid contact with skin or inhalation of spillage, dust or vapor. Keep unnecessary personnel away. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them.
Methods and materials for containment and cleaning up	Collect and dispose of spillage as indicated in section 13 of the SDS.
	Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb with inert absorbent such as dry clay, sand or diatomaceous earth, commercial sorbents, or recover using pumps. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).
	Never return spills in original containers for re-use. This material and its container must be disposed of as hazardous waste. Prevent product from entering drains.
	Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers.
	Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.
Environmental precautions	Retain and dispose of contaminated wash water. Avoid release to the environment. Contact local authorities in case of spillage to drain/aquatic environment. Prevent further leakage or spillage if safe to do so. Do not contaminate water.

7. HANDLING AND STORAGE

Precautions for safe handling	Do not handle or store near an open flame, heat or other sources of ignition. Porous material such as rags, paper, insulation, or organic clay may spontaneously combust when wetted with this material. May auto-oxidize with sufficient heat generation to ignite if spread (as a thin film) or absorbed on porous or fibrous material. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Contaminated rags and cloths must be put in fireproof containers for disposal. Avoid breathing vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged exposure. Wash thoroughly after handling.
Conditions for safe storage, including any incompatibilities	Do not store in direct sunlight. Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area. Keep under a nitrogen blanket.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational exposure limits

US. OSHA Table Z-1 Permissible Exposure Limits (PEL) for Air Contaminants (29 CFR 1910.1000)

Material	Туре	Value	
FURFURAL (CAS 98-01-1)	PEL	20 mg/m3	
		5 ppm	
US. ACGIH Threshold Limit Values (TLV)		
Material	Туре	Value	
FURFURAL (CAS 98-01-1)	TWA	0.2 ppm	



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NIOSH. Immediately Danger	ous to Life or He	ealth (IDLH) Values, as	amended	
Material		Туре	Va	alue
FURFURAL (CAS 98-01-1)		IDLH	2.	1 %
			10)0 ppm
iological limit values				
ACGIH Biological Exposure		Determinent	0	
	Value	Determinant	Specimen	Sampling Time
FURFURAL (CAS 98-01-1)	200 mg/l	Furoic acid, with hydrolysis	Urine	*
* - For sampling details, plea	se see the sourc	ce document.		
xposure guidelines				
US - California OELs: Skin d	esignation			
FURFURAL (CAS 98-01	,		be absorbed throu	ugh the skin.
US - Minnesota Haz Subs: S	•	applies		
FURFURAL (CAS 98-01	,	Skin	designation applie	es.
US - Tennessee OELs: Skin	-			
FURFURAL (CAS 98-01	,		be absorbed throu	ugh the skin.
		-	nor of outonoous a	hooration
FURFURAL (CAS 98-01 US. OSHA Table Z-1 Limits	,		ger of cutaneous a n	
FURFURAL (CAS 98-01		-	be absorbed throu	ugh the skin.
ppropriate engineering controls		n-proof ventilation equi		-
ndividual protection measures, s			, ,	
Eye/face protection	-		espirator with orga	nic vapor cartridge and full facepiece.
Skin protection				
Hand protection	Chemical res	istant gloves.		
Other	Use of an imp	pervious apron is recom	mended. Chemica	al resistant gloves.
Respiratory protection	Chemical res	pirator with organic vap	or cartridge and fu	ull facepiece.
Thermal hazards	Wear approp	riate thermal protective	clothing, when ne	cessary.
eneral hygiene considerations	and drink. All material and	ways observe good per	sonal hygiene mea	n using do not smoke. Keep away from for asures, such as washing after handling the Routinely wash work clothing and protecti

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Refer to Spec Sheet
Physical state	Liquid.
Form	Liquid.
Color	Refer to Spec Sheet
Odor	Characteristic.



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Odor threshold	Not available.	
рН	Not available.	
Melting point/freezing point	-36.58 °F (-38.1 °C)	
Initial boiling point and boiling	323.6 °F (162 °C)	
Flash point	140.0 °F (60.0 °C) Closed Cup	
Evaporation rate	Not available.	
Flammability (solid, gas)	Not applicable.	
Upper/lower flammability or explo	sive limits 2.1 %	
Explosive limit - lower (%)	2.1 % 19.3 %(V)	
Explosive limit - upper (%)		
Vapor pressure	2.23 mm Hg at 25 °C	
Vapor density	3.3	
Relative density	Not available.	
Solubility(ies) Solubility (water)	Soluble	
Partition coefficient (n-octanol/water)	0.41	
Auto-ignition temperature	600.8 °F (316 °C)	
Decomposition temperature	Not available.	
Viscosity	Not available.	
Other information		
Density	1.16 g/cm3 estimated at 25 °C	
Dynamic viscosity	1.49 mPa.s (77 °F (25 °C))	
Explosive properties	Not explosive.	
Flammability class	Combustible IIIA estimated	
Kinematic viscosity	1.289 mm²/s estimated	
Molecular formula	C5-H4-O2	
Molecular weight	96.08 g/mol	
Oxidizing properties	Not oxidizing.	
Specific gravity	1.16 estimated 1.16 estimated	
Surface tension	40.7 mN/m (85.82 °F (29.9 °C))	

VOC

10. STABILITY AND REACTIVITY

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

100 % EPA estimated



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Conditions to avoid	Porous material such as rags, paper, insulation, or organic clay may spontaneously combust when wetted with this material.
Incompatible materials	Strong acids. Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products if stored and handled as indicated.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Inhalation	Fatal if inhaled.
Skin contact	Harmful in contact with skin. Causes skin irritation.
Eye contact	Causes serious eye irritation.
Ingestion	Toxic if swallowed.
Symptoms related to the physical, chemical and toxicological characteristics	Headache. Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation. Skin irritation. May cause redness and pain.

Information on toxicological effects

Acute toxicity

Fatal if inhaled. Toxic if swallowed. Harmful in contact with skin.

Product	Species	Test Results
FURFURAL (CAS 98-01-1)		
Acute		
Dermal		
LD50	Rabbit	1100 mg/kg
Inhalation		
LC50	Rat	>= 1.63 ppm, 4 hours
Oral		
LD50	Rat	100 mg/kg
Skin corrosion/irritation	Causes skin irritation.	
Serious eye damage/eye irritation	Causes serious eye irritation.	
Respiratory or skin sensitization		
Respiratory sensitization	Due to partial or complete lack of	data the classification is not possible.
Skin sensitization	Due to partial or complete lack of data the classification is not possible.	
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.	
Carcinogenicity	Suspected of causing cancer.	
IARC Monographs. Overall	Evaluation of Carcinogenicity	
FURFURAL (CAS 98-0	1-1) 3	Not classifiable as to carcinogenicity to humans.
OSHA Specifically Regulate	d Substances (29 CFR 1910.1001-1	053)
Not listed.		
US. National Toxicology Pro	gram (NTP) Report on Carcinogens	
Not listed.		



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Reproductive toxicity	Due to partial or complete lack of data the classification is not possible.
Specific target organ toxicity - single exposure	May cause respiratory irritation.
Specific target organ toxicity - repeated exposure	Due to partial or complete lack of data the classification is not possible.
Aspiration hazard	Due to partial or complete lack of data the classification is not possible.
Chronic effects	Prolonged inhalation may be harmful.

12. ECOLOGICAL INFORMATION

Ecotoxicity	Harmful to	o aquatic life with long lasting effects.		
Product		Species	Test Results	
FURFURAL (CAS 98-01-1)				
Aquatic				
Algae	EC50	Algae	570 mg/l, 24 hours	
Crustacea	LC50	Water flea (Daphnia magna)	29 mg/l, 24 hours	
Acute				
Fish	LC50	Fathead minnow (Pimephales promelas)	32 mg/l, 96 hours	
			13.4 - 19.3 mg/l, 96 hours	
Persistence and degradability	No data is	s available on the degradability of this substand	ce.	
Bioaccumulative potential				
Partition coefficient n-octand	ol / water (log	Kow)		
Mobility in soil	No data a	No data available.		
Other adverse effects	The produpotential.	The product contains volatile organic compounds which have a photochemical ozone creation potential.		
13. DISPOSAL CONSIDE	RATIONS			
Disposal instructions	Do not discharge into drains, water courses or onto the ground. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.			
Local disposal regulations	Dispose i	Dispose in accordance with all applicable regulations.		
Hazardous waste code	Not estab	Not established.		
US RCRA Hazardous Wast	e U List: Refe	rence		
FURFURAL (CAS 98-0	1-1)	U125		
Waste from residues / unused products		ntainers or liners may retain some product resident of in a safe manner (see: Disposal instruction		
Contaminated packaging		ptied containers may retain product residue, fol Empty containers should be taken to an approv	-	



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14. TRANSPORT INFORMATION

ADN

ADN	
UN number	1199
UN proper shipping name	FURALDEHYDES
Transport hazard class(es)	6.1
Subsidiary class(es)	3
Packing group	II
Environmental hazards	No
Labels required	6.1, 3
ADR	
UN number	1199
UN proper shipping name	FURALDEHYDES
Transport hazard class(es)	6.1
Subsidiary class(es)	3
Packing group	II
Environmental hazards	No
Labels required	6.1, 3
RID	
UN number	1199
UN proper shipping name	FURALDEHYDES
Transport hazard class(es)	6.1
Subsidiary class(es)	3
Packing Group	II
Environmental Hazards	No
Labels required	6.1,3
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
DOT	
BULK	
UN number	1199
Proper shipping name	FURALDEHYDES
Hazard class	6.1
Subsidiary hazard class	3
Packing group	II
Environmental hazards	
Marine pollutant	No
Packaging exceptions	153
Packaging bulk	243
Reportable quantity	5000
Labels required	6.1, 3
DOT	
NON-BULK	
UN number	1199
Proper shipping name	FURALDEHYDES
Hazard class	6.1
Subsidiary hazard class	3



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Packing group	II
Environmental hazards	
Marine pollutant	No
Packaging exceptions	153
Packaging non bulk	202
Labels required	6.1, 3
ΙΑΤΑ	
UN number	1199
UN proper shipping name	FURALDEHYDES
Transport hazard class(es)	6.1
Subsidiary class(es)	3
Packing group	II
Environmental hazards	No
Labels required	6.1, 3
IMDG	
UN number	1199
UN proper shipping name	FURALDEHYDES
Transport hazard class(es)	6.1
Subsidiary class(es)	3
Packing group	II
Environmental hazards	
Marine pollutant	No
Labels required	6.1, 3
Transport in bulk according	Not applicable.
to Annex II of MARPOL	
73/78 and the IBC Code	

ADN; ADR; DOT BULK; DOT NON-BULK; IATA; IMDG; RID



15. REGULATORY INFORMATION

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Toxic Substances Control Act (TSCA)

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.



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Revision Date: 07-16-2024 Page 11 of 12 Print Date: 07-16-2024 Version #04 CERCLA Hazardous Substance List (40 CFR 302.4) FURFURAL (CAS 98-01-1) Listed. SARA 304 Emergency release notification Not regulated. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053) Not listed. Superfund Amendments and Reauthorization Act of 1986 (SARA) SARA 302 Extremely hazardous substance Not listed. SARA 311/312 Hazardous Yes chemical Classified hazard Flammable (gases, aerosols, liquids, or solids) categories Acute toxicity (any route of exposure) Skin corrosion or irritation Serious eye damage or eye irritation Carcinogenicity Specific target organ toxicity (single or repeated exposure) SARA 313 (TRI reporting) Not regulated. Other federal regulations Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List Not regulated. Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130) Not regulated. Clean Water Act (CWA) Hazardous substance Section 112(r) (40 CFR 68.130) Safe Drinking Water Act Not regulated. (SDWA) FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace FURFURAL (CAS 98-01-1) High priority 16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION Issue date 11-29-2015 **Revision date** 07-16-2024 Version # 04 HMIS® ratings Health: 2

> Flammability: 2 Physical hazard: 1



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List of abbreviations	 ACGIH: American Conference of Governmental Industrial Hygienists. ADR: Agreement concerning the International Carriage of Dangerous Goods by Road. CAS: Chemical Abstract Service. IARC: International Agency for Research on Cancer. IATA: International Air Transport Association. IBC Code: International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk. IMDG: International Maritime Dangerous Goods. MARPOL: International Convention for the Prevention of Pollution from Ships. RID: Regulations concerning the International Carriage of Dangerous Goods by Rail. STEL: Short term exposure limit. TWA: Time Weighted Average. 		
Disclaimer	Vigon International, LLC cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, and disposal and should not be considered as a guarantee or quality specification. This product has not been evaluated for safe use in e-cigarettes or any vaping application where the product(s) is/are intentionally vaporized and inhaled. Vigon International, Inc. has performed no testing on these products in e-cig/vaping applications. It is the sole responsibility of the individual(s) purchasing this product to assess its' safety in the final application. The above information relates only to this product and not to its use in combination with any other material or any particular process and is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal, and should not be considered as a guarantee or quality specification. The above information is based on data provided by and collected from recognized sources such as distributors, manufacturers, and technical groups and is considered to be accurate to the best of Vigon's knowledge as of the date of this document. It is the responsibility of the user to review all safety information about this product and determine its safety and suitability in their own processes and operations. Appropriate warnings and safe handling procedures should be provided to all handlers and users, taking into account the intended use and the		
Revision information	Product and Company Identification: Alternate Trade Names FIRE-FIGHTING MEASURES: Specific methods EXPOSURE CONTROLS/PERSONAL PROTECTION: Appropriate engineering controls EXPOSURE CONTROLS/PERSONAL PROTECTION: Eye/face protection EXPOSURE CONTROLS/PERSONAL PROTECTION: PPE Symbols Physical & Chemical Properties: Multiple Properties Toxicological Information: Toxicological Data DISPOSAL CONSIDERATIONS: Disposal instructions OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION: Reference		

abbreviations

s OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION: List of