

SAFETY DATA SHEET

SECTION 1: Identification of the substance/mixture and of the company/undertaking

[1a,b 1.1] PRODUCT IDENTIFIERS/ TRADE NAME(s)	Aculon OP-225	[1c 1.2] RELEVANT IDENTIFIED USES OF THE SUBSTANCE OR MIXTURE AND USES ADVISED AGAINST	adhesion promoter
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1.3 Details of the supplier of the safety data sheet



10110 Sorrento Valley Road
 San Diego, CA 92121
 phone 858-350-9474
 fax 858-350-9422
 Email: support@aculon.com
 www.aculon.com

1.4 Emergency telephone number

Emergency Telephone Number CHEMTEL CHEMICAL

DOMESTIC NORTH AMERICA: 1-800-255-3924

**INTERNATIONAL CALLERS OUTSIDE THE
US TERRITORIES AND CANADA:
+1-813-248-0585**

Revision Date: 04/22/2020

SECTION 2: Hazards identification

[2A] **GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)****2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

Flammable liquids (Category 2), H225
 Acute toxicity, Oral (Category 3), H301
 Acute toxicity, Inhalation (Category 3), H331
 Acute toxicity, Dermal (Category 3), H311
 Specific target organ toxicity - single exposure (Category 1), H370
 For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements Labelling according Regulation (EC) No 1272/2008[2B] **LABELING ELEMENTS, Hazard, and Precautionary Statements****Signal word: Danger****Pictogram(s):****Hazard statement(s):**

H225 Highly flammable liquid and vapour.
 H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled
 H370 Causes damage to organs.

Precautionary statement(s)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ eye protection/ face protection.

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.

P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P304 + P340 + P311 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Supplemental Hazard Statements: none

[2C 2.3] **OTHER HAZARDS NOT OTHERWISE CLASSIFIED:** This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

[2D] **INGREDIENTS OF UNKNOWN ACUTE TOXICITY >= 1%:** none

SECTION 3: Composition/information on ingredients

Hazardous ingredients according to Regulation (EC) No 1272/2008 and 29 CFR 1910 (OSHA HCS)

Component	Classification	Concentration
Methanol; Methyl alcohol Formula : CH ₄ O Molecular weight : 32.04 g/mol		
CAS-No. : 67-56-1 EC-No. : 200-659-6 Index-No. : 603-001-00-X Registration number : 01-2119433307-44-XXXX	Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301 + H311 + H331, H370	95 - 100%

* The specific chemical identity and/or percentage of this material has been withheld as a trade secret.

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
^[4a] INHALATION	If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
^[4a] SKIN CONTACT	Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
^[4a] EYE CONTACT	Flush eyes with water as a precaution.
^[4a] INGESTION	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
^[4b] MOST IMPORTANT SYMPTOMS & EFFECTS	The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11
^[4c] INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED	no data available

SECTION 5: Firefighting measures

^[5a] 5.1 Extinguishing Media/SUITABLE/ UNSUITABLE EXTINGUISHING MEDIA	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
^[5b] 5.2 SPECIFIC HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE(IE HAZARDOUS COMBUSTION PRODUCTS)	Burning may form Carbon oxides . Use water spray to cool unopened containers.
^[5c] 5.3 ADVICE FOR FIREFIGHTERS/ PRECAUTIONS / SPECIAL PROTECTIVE EQUIPMENT	Wear self contained breathing apparatus for fire fighting if necessary.
5.4 FURTHER INFORMATION	Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

^[6a] 6.1 PERSONAL PRECAUTIONS, PPE, EMERGENCY PROCEDURES	Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.
6.2 Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.
^[6a] 6.3 METHODS & MATERIALS FOR CONTAINMENT & CLEANING UP	Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
6.4 REFERENCE TO OTHER SECTIONS	For disposal see section 13.

SECTION 7: Handling and storage

^[7a] 7.1 PRECAUTIONS FOR SAFE HANDLING	Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.
^[7b] 7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Storage class: Flammable liquids
7.3 SPECIFIC END USES	Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 CONTROL PARAMETERS: COMPONENTS WITH WORKPLACE CONTROL PARAMETERS				
^[8a] COMPONENT	CAS#	PEL/ TWA/ STEL	CONTROL PARAMETERS	BASIS (ACGIH, OSHA ETC)
Methanol	67-56-1	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Remarks			Headache Nausea Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption
		STEL	250 ppm	USA. ACGIH Threshold Limit Values(TLV)
	Remarks			Headache Nausea

				Dizziness Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption
		TWA	200 ppm 260 mg/m3	USA. NIOSH Recommended Exposure Limits
				Potential for dermal absorption
		ST	250 ppm 325 mg/m3	USA. NIOSH Recommended Exposure Limits
				Potential for dermal absorption
		TWA	200 ppm 260 mg/m3	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
				The value in mg/m3 is approximate.

Biological occupational exposure limits:

COMPONENT	CAS#	Parameters	Value	Biological Specimen	Basis
Methanol	67-56-1	Methanol	15 mg/l	Urine	USA. ACGIH - Biological Exposure Indices (BEI)
		Remarks	End of shift (As soon as possible after exposure ceases)		

Derived No Effect Level (DNEL)

Application Area	Exposure routes	Health effect	Value
Workers	Skin contact	Long-term systemic effects	40mg/kg BW/d
Consumers	Skin contact	Long-term systemic effects	8mg/kg BW/d
Consumers	Ingestion	Long-term systemic effects	8mg/kg BW/d
Workers	Skin contact	Acute systemic effects	40mg/kg BW/d
Consumers	Skin contact	Acute systemic effects	8mg/kg BW/d
Consumers	Ingestion	Acute systemic effects	8mg/kg BW/d
Workers	Inhalation	Acute systemic effects	260 mg/m3
Workers	Inhalation	Acute local effects	260 mg/m3

Workers	Inhalation	Long-term systemic effects	260 mg/m3
Workers	Inhalation	Long-term systemic effects	260 mg/m3
Consumers	Inhalation	Acute systemic effects	50 mg/m3
Consumers	Inhalation	Acute local effects	50 mg/m3
Consumers	Inhalation	Long-term systemic effects	50 mg/m3
Consumers	Inhalation	Long-term systemic effects	50 mg/m3

Predicted No Effect Concentration (PNEC)

Compartment	Value
Soil 23.5 mg/kg	Soil 23.5 mg/kg
Marine water 15.4 mg/l	Marine water 15.4 mg/l
Fresh water 154 mg/l	Fresh water 154 mg/l
Fresh water sediment 570.4 mg/kg	Fresh water sediment 570.4 mg/kg
Onsite sewage treatment plant 100 mg/kg	Onsite sewage treatment plant 100 mg/kg

^[8b] 8.2 EXPOSURE CONTROLS/ VENTILATION / ENGINEERING CONTROLS	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.
PERSONAL PROTECTIVE EQUIPMENT	
^[8c] RESPIRATORY PROTECTION	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type AXBEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
^[8c] SKIN PROTECTION	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. Full contact Material: butyl-rubber Minimum layer thickness: 0.3 mm Break through time: 480 min Material tested: Butoject® (KCL 897 / Aldrich Z677647, Size M) Splash contact Material: Nitrile rubber Minimum layer thickness: 0.4 mm Break through time: 31 min

	Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M) If used under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
[8c] EYE PROTECTION	Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
[8c] CLOTHING/BODY PROTECTION	Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
CONTROL OF ENVIRONMENTAL EXPOSURE	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

SECTION 9: Physical and chemical properties

[9a] Appearance (physical state, color, etc.)	Liquid, Clear Colorless	[9j] Upper/lower flammability or explosive limits:	Lower: 6% UEL: 36%
[9b] Odor	alcohol-like, pungent	[9k] Vapor pressure	130.3 hPa (97.7 mmHg) at 20.0 °C (68.0 °F) 546.6 hPa (410.0 mmHg) at 50.0 °C (122.0 °F) 169.27 hPa (126.96 mmHg) at 25.0 °C (77.0 °F)
[9c] Odor threshold	no data available	[9l] Vapor density	1.11
[9d] pH	no data available	[9m] Relative Density	0.79 g/cm3 at 25 °C (77 °F)
[9e] Melting point/freezing point	-98 °C (-144 °F) - lit.	[9n] Solubility (in H₂O)	miscible
[9f] Initial boiling point and boiling range	64.7 °C (148.5 °F) - lit.	[9o] Partition coefficient: n-octanol/water	log Pow: -0.77
[9g] Flash point	9.7 °C (49.5 °F) - closed cup	[9p] Auto-ignition temperature	455.0 °C (851.0 °F)
[9h] Evaporation rate	no data available	[9q] Decomposition temperature	no data available
[9i] Flammability (solid, gas)	no data available	[9r] Viscosity	no data available
		[9s] Explosive Properties	Not explosive
		[9t] Oxidizing Properties	no data available
9.2 Other safety information:	minimum ignition energy 0.14 mJ		

SECTION 10: Stability and reactivity

[10a 10.1] REACTIVITY	no data available
[10b 10.2] CHEMICAL STABILITY	Stable under recommended storage conditions..
[10c 10.3] POSSIBILITIES OF HAZARDOUS REACTIONS	Vapours may form explosive mixture with air.

[10d 10.4] CONDITIONS TO AVOID	Heat, flames and sparks.
[10e 10.5] INCOMPATIBLE MATERIALS	Acid chlorides, Acid anhydrides, Oxidizing agents, Alkali metals, Reducing agents, Acids
[10f 10.6] HAZARDOUS DECOMPOSITION PRODUCTS	Other decomposition products - no data available In the event of fire: see section 5

SECTION 11: Toxicological information

[11a] LIKELY ROUTES OF EXPOSURE	INHALATION: is not expected if proper ventilation or personal protective equipment is used while working with this product INGESTION: Ingestion is not expected if proper industrial hygiene practices are followed, including no eating, drinking, or smoking while working with chemicals SKIN: is not expected if proper personal protective equipment (gloves and protective clothing) is used while working with this product EYE CONTACT: is not expected if proper personal protective equipment (safety glasses or goggles) is used while working with this product
[11b] SYMPTOMS RELATED TO PHYSICAL, CHEMICAL & TOXIC CHARACTERISTICS	INHALATION: May cause drowsiness or dizziness. May be harmful if inhaled. INGESTION: Methyl alcohol may be fatal or cause blindness if swallowed. Effects due to ingestion may include:, Headache, Dizziness, Drowsiness, metabolic acidosis, Coma, Seizures. Symptoms may be delayed., Damage of the:, Liver, Kidney SKIN: EYE CONTACT:
[11d] DELAYED / IMMEDIATE EFFECTS, CHRONIC EFFECTS FROM SHORT/LONG TERM EXPOSURE	Reproductive toxicity: no data available Specific target organ toxicity - single exposure: Causes damage to organs, liver, kidney, blindness Specific target organ toxicity - repeated exposure: The substance or mixture is not classified as specific target organ toxicant, repeated exposure. Aspiration hazard: No aspiration toxicity classification
[11D] NUMERICAL MEASURES OF TOXICITY	ACUTE TOXICITY ESTIMATES: none known Acute toxicity LDLO Oral - Human - 143 mg/kg Remarks: Lungs, Thorax, or Respiration: Dyspnea. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. LD50 Oral - Rat - 1,187 - 2,769 mg/kg LC50 Inhalation - Rat - 4 h - 128.2 mg/l LC50 Inhalation - Rat - 6 h - 87.6 mg/l LD50 Dermal - Rabbit - 17,100 mg/kg SKIN CORROSION/IRRITATION Skin - Rabbit Result: No skin irritation Serious eye damage/eye irritation Eyes - Rabbit Result: No eye irritation

	Respiratory or skin sensitization Maximisation Test (GPMT) - Guinea pig Does not cause skin sensitisation. (OECD Test Guideline 406) Germ cell mutagenicity Ames test S. typhimurium Result: negative in vitro assay fibroblast Result: negative Mutation in mammalian somatic cells. Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis) Mouse - male and female Result: negative
[11e] CARCINOGENICITY	This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification. 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. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. 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. OSHA: No component of this product present at levels greater
ADDITIONAL INFORMATION	Methyl alcohol may be fatal or cause blindness if swallowed. Effects due to ingestion may include:, Headache, Dizziness, Drowsiness, metabolic acidosis, Coma, Seizures. Symptoms may be delayed., Damage of the:, Liver, Kidney Stomach - Irregularities - Based on Human Evidence Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

[12a 12.1] ECOTOXICITY	Toxicity to fish mortality LC50 - Lepomis macrochirus (Bluegill) - 15,400.0 mg/l - 96 h NOEC - Oryzias latipes - 7,900 mg/l - 200 h Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - > 10,000.00 mg/l - 48 h Toxicity to algae Growth inhibition EC50 - Scenedesmus capricornutum (fresh water algae) - 22,000.0 mg/l - 96 h
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^[12b 12.2] PERSISTENCE AND DEGRADABILITY	Biodegradability aerobic - Exposure time 5 d Result: 72 % - rapidly biodegradable Biochemical Oxygen Demand (BOD) 600 - 1,120 mg/g Chemical Oxygen Demand (COD) 1,420 mg/g Theoretical oxygen demand 1,500 mg/g
^[12c 12.3] BIOACCUMULATIVE POTENTIAL	Bioaccumulation Cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l Bioconcentration factor (BCF): 1.0
^[12d 12.4] MOBILITY IN SOIL	Will not adsorb on soil.
^{12.5} RESULTS OF PBT AND vPvB ASSESSMENT	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
^[12e 12.6] OTHER ADVERSE EFFECTS (OZONE LAYER ETC.)	Additional ecological information: Avoid release to the environment. Stability in water at 19 °C 83 - 91 % - 72 h Remarks: Hydrolyses on contact with water. Hydrolyses readily.

SECTION 13: Disposal considerations

^[13]Contact a licensed professional waste disposal service. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated Packaging Disposal: Contact a licensed professional waste disposal service.

SECTION 14: Transport information

	14.1[a] UN number	14.2[b] UN proper shipping name	14.3[c] Transport hazard class(es)	14.4[d] Packaging group	14.5[e] Environmental hazards
ADR/RID:	UN 1230	Methanol	3 (6.1)	II	no
IMDG:	UN 1230	Methanol	3 (6.1)	II	no
IATA:	UN 1230	Methanol	3 (6.1)	II	no
US DOT (Domestic)	UN 1230	Methanol	3	II	RQ 5000 lbs
US DOT (air/international)	UN 1230	Methanol	3 (6.1)	II	RQ 5000 lbs

^[14d] ENVIRONMENTAL HAZARDS	Marine Pollutant: no
^[14f] BULK TRANSPORT (MARPOL 73/78/IBC CODE)	IMDG: NOT APPLICABLE
^[14g] SPECIAL PRECAUTIONS	IATA per S.P. A104 does not require class 6 label, US DOT does not require Class 6

label if shipping within the US.

SECTION 15: Regulatory information

EU

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

No data available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

US

TSCA

Not all materials are listed on the TSCA inventory. For R&D use only.

OSHA

This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard.

SARA SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

The following components are subject to reporting levels established by SARA Title III, Section 313

Methanol
CAS-No. 67-56-1
Revision Date 2007-07-01

Sara 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Methanol, CAS# 67-56-1 Revision Date 2007-07-01

Pennsylvania Right To Know Components

Methanol, CAS# 67-56-1 Revision Date 2007-07-01

New Jersey Right To Know Components California Prop. 65 Components

Methanol, CAS# 67-56-1 Revision Date 2007-07-01

Methanol, CAS# 67-56-1 Revision Date 2012-03-16

SECTION 16: Other information

Revision Date:

12/20/11 Version 1.0 original issue

01/10/14 version 2.0 format update

08/21/15 version 2.0 GHS update; proper shipping name correction

Full text of H-Statements referred to under sections 2 and 3.

Acute Tox. Acute toxicity

Flam. Liq. Flammable liquids

H225 Highly flammable liquid and vapour.

H301 Toxic if swallowed.

H301 + H311 + H331 Toxic if swallowed, in contact with skin or if inhaled

H311 Toxic in contact with skin.

H331 Toxic if inhaled.

H370 Causes damage to organs.

INFORMATION CONTAINED IN THIS SAFETY DATA SHEET IS FOR USE BY TECHNICALLY QUALIFIED PERSONNEL AT THEIR DISCRETION AND RISK. ALL STATEMENTS, TECHNICAL INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED ON TESTS AND DATA WHICH WE BELIEVE TO BE RELIABLE, BUT THE ACCURACY OR COMPLETENESS THEREOF IS NOT GUARANTEED AND NO WARRANT OF ANY KIND IS MADE WITH RESPECT THERETO. SINCE THE COMPANY SHALL HAVE NO CONTROL OF THE USE OF THE PRODUCT DESCRIBED HEREIN, THE COMPANY ASSUMES NO LIABILITY OF LOSS OR DAMAGE INCURRED FROM THE PROPER OR IMPROPER USE OF SUCH PRODUCT.

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