MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Date of issue: 10/21/2012 Version 1.0

SECTION 1. Identification

Product identifier

Product number 805223

Product name p-Cresol for synthesis

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Chemical for synthesis

Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | SDS Phone Support: +1-978-715-1335 | General Inquiries: +1-978-751-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)

e-mail: mm_sds@merckgroup.com

Emergency telephone 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Acute toxicity, Category 3, Dermal, H311
Acute toxicity, Category 3, Oral, H301
Skin corrosion, Category 1B, H314

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms

Signal Word
Danger

Hazard Statements
H301 + H311 Toxic if swallowed or in contact with skin.
H314 Causes severe skin burns and eye damage.

Precautionary Statements
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P309 + P310 IF exposed or if you feel unwell: Immediately call a POISON CENTER or doctor/physician.

OSHA Hazards
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other hazards
None known.

SECTION 3. Composition/information on ingredients

Formula	$CH_3C_6H_4OH$	C_7H_8O (Hill)
CAS-No.	106-44-5	
Molar mass	108.14 g/mol	

Hazardous ingredients
Chemical Name (Concentration)
CAS-No.
p-cresol (>= 90 % - <= 100 %)
106-44-5

SECTION 4. First aid measures

Description of first-aid measures
Inhalation
After inhalation: fresh air. Get medical attention.

Skin contact
After skin contact: wash off with plenty of water. Remove contaminated clothing. Call a physician immediately.

Eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist.

Ingestion
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
Irritation and corrosion, Cough, Shortness of breath, Dizziness, agitation, spasms, Nausea, Vomiting, cardiovascular disorders, Headache

Indication of any immediate medical attention and special treatment needed

No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Water, Carbon dioxide (CO2), Foam, Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Combustible material, Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
Development of hazardous combustion gases or vapors possible in the event of fire.

Advice for firefighters

Special protective equipment for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of vapors/aerosols or dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Depending on the state of matter, take up with suitable equipment or with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Conditions for safe storage, including any incompatibilities

Protected from light. Dry. Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +15°C to +25°C (+59°F to +77°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
p-cresol 106-44-5			
ACGIH	Time Weighted Average (TWA):	20 mg/m³	Form of exposure: Inhalable fraction and vapor.
	Skin designation:		Can be absorbed through the skin. Form of exposure: Inhalable fraction and vapor.
NIOSH/GUIDE	Recommended exposure limit (REL):	2.3 ppm 10 mg/m³	
OSHA_TRANS	PEL:	5 ppm 22 mg/m³	
	Skin designation:		Can be absorbed through the skin.
Z1A	Time Weighted Average (TWA):	5 ppm 22 mg/m³	
	Skin designation (Final Rule Limit applies):		Can be absorbed through the skin.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance. Work under hood. Do not inhale substance/mixture.

Eye/face protection

Tightly fitting safety goggles

Hand protection

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.

Recommended:

full contact:

Glove material:	polychloroprene
Glove thickness:	0.65 mm
Break through time:	> 480 min

splash contact:

Glove material:	natural latex
Glove thickness:	0.6 mm

Break through time: > 60 min

Other protective equipment:
protective clothing

Respiratory protection
required when dusts/vapors/aerosols are generated.
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	solid
Color	colorless
Odor	phenol-like
Odor Threshold	No information available.
pH	No information available.
Melting point	90 - 93 °F (32 - 34 °C)
Boiling point/boiling range	396.5 °F (202.5 °C) at 1,013 hPa
Flash point	187 °F (86 °C) Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1 %(V)
Upper explosion limit	No information available.
Vapor pressure	0.06 hPa at 68 °F (20 °C) 2.27 hPa at 140 °F (60 °C)
Relative vapor density	3.74
Relative density	1.034 g/cm³ at 68 °F (20 °C)

Water solubility	20 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 1.94 (experimental) Bioaccumulation is not expected (log Pow <1). (Lit.)
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	7.9 mPa.s at 104 °F (40 °C)
Ignition temperature	1031 °F (555 °C)

SECTION 10. Stability and reactivity

Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.
Forms explosive mixtures with air on intense heating.

Chemical stability

Sensitivity to light
Sensitive to air.

Possibility of hazardous reactions

Violent reactions possible with:

Strong oxidizing agents, Nitric acid, fuming sulfuric acid

Conditions to avoid

Strong heating.
A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

Aluminum

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure
Eye contact, Skin contact, Ingestion

Target Organs
Eyes
Skin

Respiratory system
Central nervous system
Liver
Kidneys
pancreas
cardiovascular system

Acute oral toxicity
LD50 rat: 207 mg/kg (IUCLID)
Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

absorption

Acute inhalation toxicity

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

Corrosive to respiratory system

Acute dermal toxicity
LD50 rabbit: 301 mg/kg
(RTECS)

LD50 rat: 750 mg/kg
(RTECS)

absorption

Skin irritation
rabbit
Result: Causes burns.
(Lit.)

Causes severe burns.

Eye irritation
Causes serious eye damage.
Risk of blindness!

Genotoxicity in vivo
Mutagenicity (mammal cell test):
Result: negative
(IUCLID)

Genotoxicity in vitro
Ames test
Salmonella typhimurium
Result: negative
(National Toxicology Program)

Specific target organ systemic toxicity - single exposure
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

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

Further information
After absorption:
Systemic effects:
Headache, Nausea, Vomiting, Dizziness, agitation, spasms, cardiovascular disorders
Damage to:
Central nervous system, Liver, Kidney
Further data:
This substance should be handled with particular care.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish
LC50 Oncorhynchus mykiss (rainbow trout): 7.5 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): 14 mg/l; 48 h (Lit.)

Toxicity to algae
NOEC Desmodesmus subspicatus (green algae): 7.8 mg/l; 24 h (Lit.)

Toxicity to bacteria
EC50 Photobacterium phosphoreum: 1.5 - 1.72 mg/l; 5 min (Lit.)

Persistence and degradability

Biodegradability
96 %; 5 d
(IUCLID)
Readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water
log Pow: 1.94
(experimental)
Bioaccumulation is not expected (log Pow <1). (Lit.)

Mobility in soil
No information available.

Other adverse effects
Additional ecological information
Biological effects:
Change in the flavor characteristics of fish protein.
Hazard for drinking water supplies.
Further information on ecology
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 3455
Proper shipping name	CRESOLS, SOLID
Class	6.1 (8)
Packing group	II
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 3455
Proper shipping name	CRESOLS, SOLID
Class	6.1 (8)
Packing group	II
Environmentally hazardous	--

Special precautions for user	no

Sea transport (IMDG)

UN number	UN 3455
Proper shipping name	CRESOLS, SOLID
Class	6.1 (8)
Packing group	II
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-A S-B

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Toxic by ingestion
Toxic by skin absorption
Corrosive to skin
Corrosive to eyes
Corrosive by inhalation.
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

TSCA list

Not relevant

SARA 311/312 Hazards

Acute Health Hazard
Chronic Health Hazard

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:
Ingredients
p-cresol

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:
Ingredients
p-cresol

US State Regulations

Massachusetts Right To Know

Ingredients
p-cresol

Pennsylvania Right To Know

Ingredients

p-cresol

New Jersey Right To Know

Ingredients

p-cresol

California Prop 65 Components

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

Notification status

TSCA:	On TSCA Inventory
DSL:	All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

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

H301	Toxic if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.