



# Cell Signaling

TECHNOLOGY®

**SAFETY DATA SHEET (SDS):** According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

**Issuing Date:** 2014-05-21

**Revision Date:** 2014-07-18

**Version:** 1

## SECTION 1. Identification

### Product identifier

**Product No.** 12767  
**Product name** DMF (Dimethylformamide)  
**UN number** UN2265

### Recommended use of the chemical and restrictions on use

**Identified uses** This product is intended for research purposes only.  
**Uses advised against** This product is not intended for use in diagnostic procedures or therapeutics.  
This product is not intended for use in humans or animals.

### Manufacturer, importer, supplier

**Manufacturer address** Cell Signaling Technology, Inc.  
3 Trask Lane  
Danvers, MA 01923  
United States  
TEL: +1 978 867 2300  
FAX: +1 978 867 2400

**Website** www.cellsignal.com  
**Email address** support@cellsignal.com  
**Company phone number** 978-867-2300  
**Emergency telephone number** In case of emergency call CHEMTREC 1-800-424-9300

## SECTION 2. Hazard(s) identification

### Classification

Acute dermal toxicity	Category 4
Acute inhalation toxicity	Category 4
Serious eye damage/eye irritation	Category 2
Reproductive toxicity	Category 1B
Flammable liquids	Category 3

### GHS Label elements, including precautionary statements



**Signal Word**  
Danger

**Hazard statement(s)**

Flammable liquid and vapor  
 Harmful in contact with skin  
 Harmful if inhaled  
 Causes serious eye irritation  
 May damage fertility or the unborn child

**Precautionary Statement(s)**

Obtain special instructions before use  
 Do not handle until all safety precautions have been read and understood  
 Use personal protective equipment as required  
 Avoid breathing dust/fume/gas/mist/vapors/spray  
 Use only outdoors or in a well-ventilated area  
 Keep away from heat/sparks/open flames/hot surfaces. — No smoking  
 Keep container tightly closed  
 Ground/Bond container and receiving equipment  
 Use only non-sparking tools  
 Take precautionary measures against static discharge  
 IF exposed or concerned: Get medical advice/attention  
 Call a POISON CENTER or doctor/physician if you feel unwell  
 Wash contaminated clothing before reuse  
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 Store locked up  
 Store in a well-ventilated place. Keep cool  
 Dispose of contents/container to an approved waste disposal plant

**Supplementary Hazard Information**

Hazards not otherwise classified (HNOC) None

<b>SECTION 3. Composition/information on ingredients</b>
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<b>Formula</b>	C <sub>3</sub> H <sub>7</sub> NO
<b>Molecular Weight</b>	73.09 g/mol
<b>Chemical nature</b>	Monoconstituent substance
<b>Synonyms</b>	DMF; DMFA; Dimethylformamide; N-Formyldimethylamine; Formic acid, amide, N,N-dimethyl-

Chemical Name	CAS No.	Weight %
N,N-dimethylformamide	68-12-2	100

<b>SECTION 4. First-aid measures</b>
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<b>Eye contact</b>	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing.
<b>Skin contact</b>	Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Immediate medical attention is not required.
<b>Inhalation</b>	Immediate medical attention is required. Move to fresh air. If not breathing, give artificial respiration. Move to fresh air in case of accidental inhalation of vapors. Immediate medical attention is not required. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
<b>Ingestion</b>	Do NOT induce vomiting. Immediate medical attention is required. Never give anything by mouth to an unconscious person. Drink plenty of water. Clean mouth with water. Do not induce vomiting without medical advice. Consult a physician. If swallowed, do not induce vomiting - seek medical advice.

**Most important symptoms and effects, both acute and delayed**

Vertigo and blurred vision. Flushing of the face, neck, arms, hands, and chest. Nausea, vomiting, abdominal pain and hypertension. Jaundice and altered liver function tests may be observed. Possible renal, hematologic, cardiovascular, and dermatologic effects.

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**Advice for emergency responders**

<b>General advice</b>	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance. If symptoms persist, call a physician.
<b>Protection of First-aiders</b>	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**SECTION 5. Fire-fighting measures****Extinguishing media**

<b>Suitable Extinguishing Media</b>	Cool containers / tanks with water spray.
<b>Unsuitable Extinguishing Media</b>	CAUTION: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical**

No information available.

**Explosion Data**

<b>Sensitivity to Mechanical Impact</b>	None.
<b>Sensitivity to Static Discharge</b>	None.

**Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**SECTION 6. Accidental release measures****Personal precautions, protective equipment and emergency procedures**

<b>For non-emergency personnel</b>	Use personal protective equipment. Keep people away from and upwind of spill/leak. Remove all sources of ignition. Heat, flames and sparks. Ensure adequate ventilation. Evacuate personnel to safe areas.
<b>Other information</b>	No information available.

**Environmental precautions**

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevention of fire and explosion. A vapor suppressing foam may be used to reduce vapors. Try to prevent the material from entering drains or water courses. Do not allow material to contaminate ground water system. Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks). Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas. Do not flush into surface water or sanitary sewer system.

**Methods and material for containment and cleaning up**

<b>Methods for containment</b>	Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.
<b>Methods for cleaning up</b>	Cover liquid spill with sand, earth or other noncombustible absorbent material. Sweep up and shovel into suitable containers for disposal. Soak up with inert absorbent material. Dam up. Pick up and transfer to properly labeled containers.

**SECTION 7. Handling and storage**

**Precautions for safe handling**

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Prevent the formation of vapors, mists and aerosols. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. There is a hazard associated with rags, paper or any other material used to remove spills which become soaked with product. Avoid accumulation of these: they are to be disposed off safely after use. Avoid static electricity build up with connection to earth. Use only in area provided with appropriate exhaust ventilation.

**Conditions for safe storage, including any incompatibilities**

<b>Technical measures/Storage conditions</b>	Keep away from direct sunlight.
<b>Packaging material</b>	No information available.
<b>Incompatible products</b>	Strong oxidizing agents, Halogens, Nitrates, Alkalis.

**SECTION 8. Exposure controls/personal protection****Control parameters**

Occupational exposure limit values			
Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
N,N-dimethylformamide	S* TWA : 10 ppm	TWA : 10 ppm TWA : 30 mg/m <sup>3</sup> S*	IDLH : 500 ppm TWA : 10 ppm TWA : 30 mg/m <sup>3</sup>

**Appropriate engineering controls**

Showers, eyewash stations, and ventilation systems.

**Individual protection measures, such as personal protective equipment**

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

<b>Eye/face protection</b>	Tightly fitting safety goggles. Face-shield.
<b>Skin and body protection</b>	Wear protective gloves/clothing.
<b>Respiratory protection</b>	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
<b>Hygiene measures</b>	When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Keep away from food, drink and animal feeding stuffs.

**SECTION 9. Physical and chemical properties****Information on basic physical and chemical properties**

<b>Physical state</b>	Liquid
<b>Appearance</b>	Clear
<b>Odor</b>	Characteristic Mild amine
<b>Color</b>	Colorless
<b>Odor Threshold</b>	100 ppm
<b>pH</b>	6.7 (0.5 molar solution in water)
<b>Melting point/freezing point</b>	No information available
<b>Initial boiling point and boiling range</b>	153 °C DIN 53171

<b>Flash point</b>	58 °C Closed cup DIN 51755
<b>Evaporation rate</b>	No information available
<b>Flammability (solid, gas)</b>	No information available
<b>Upper flammability limit</b>	16 No information available.
<b>Lower flammability limit</b>	2.2 No information available.
<b>Vapor pressure</b>	0.035 hPa @ 20 °C
<b>Vapor density</b>	No information available
<b>Relative density</b>	No information available
<b>Solubility</b>	No information available.
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient: n-octanol/water</b>	No information available
<b>Autoignition temperature</b>	410 °C DIN 51794
<b>Decomposition temperature</b>	No information available.
<b>Explosive properties</b>	No information available
<b>Oxidizing properties</b>	No information available
<b>Molecular Weight</b>	73.09 g/mol
<b>VOC content</b>	No information available
<b>Viscosity</b>	No information available.
<b>Density</b>	0.094 g/cm <sup>3</sup> @ 20°C

## SECTION 10. Stability and reactivity

### Reactivity

No information available.

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

<b>Hazardous reactions</b>	None under normal processing.
<b>Hazardous polymerization</b>	None under normal processing.

### Conditions to Avoid

Heat (temperatures above flash point), sparks, ignition points, flames, static electricity.

### Incompatible Materials

Strong oxidizing agents, Halogens, Nitrates, Alkalis.

### Hazardous Decomposition Products

None under normal use. Thermal decomposition can lead to release of irritating gases and vapors: Dimethylamine, Carbon monoxide (CO).

## SECTION 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	May be harmful if inhaled.
<b>Eye contact</b>	Contact with eyes may cause irritation.
<b>Skin contact</b>	May be harmful in contact with skin.
<b>Ingestion</b>	May be harmful if swallowed.

### Information on toxicological effects

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
N,N-dimethylformamide	= 2250 mg/kg ( Rat )	= 1100 mg/kg ( Rat )	= 1948 ppm/4 hour ( Rat )

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

<b>Symptoms</b>	Vertigo and blurred vision. Flushing of the face, neck, arms, hands, and chest. Nausea, vomiting, abdominal pain and hypertension. Jaundice and altered liver function tests may be observed. Possible renal, hematologic, cardiovascular, and dermatologic effects.
<b>Serious eye damage/eye irritation</b>	Causes serious eye irritation.
<b>Corrosivity</b>	No information available.
<b>Sensitization</b>	No information available.
<b>Mutagenic effects</b>	No information available.
<b>Carcinogenicity</b>	No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Reproductive toxicity</b>	May cause harm to the unborn child.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Chronic Toxicity</b>	Avoid repeated exposure.
<b>Target Organ Effects</b>	Central Vascular System (CVS), Eyes, Respiratory system, Kidney, Liver, Skin.
<b>Neurological effects</b>	No information available.
<b>Aspiration Hazard</b>	No information available.

## SECTION 12. Ecological information

### Ecotoxicity

Product does not present an aquatic toxicity hazard based on known or supplied information.

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
N,N-dimethylformamide	EC50 500 mg/L (Desmodesmus subspicatus) 96 h	LC50 6300 mg/L (Lepomis macrochirus) 96 h LC50 9800 mg/L (Oncorhynchus mykiss) 96 h LC50 10410 mg/L (Pimephales promelas) 96 h	EC50 6800 - 13900 mg/L (Daphnia magna) 48 h EC50 8485 mg/L (Daphnia magna) 48 h EC50 7500 mg/L (Daphnia magna) 48 h

<b>Persistence and degradability</b>	Product is biodegradable.
<b>Bioaccumulation</b>	Not likely to bioaccumulate.
<b>Mobility</b>	Expected to have very high mobility in soil.

Chemical Name	Octanol-Water Partition Coefficient
N,N-dimethylformamide	-1.028

### Other adverse effects

Identified as a suspected endocrine disruptor.

## SECTION 13. Disposal considerations

### Waste Disposal Methods

Should not be released into the environment.

### Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way.

## SECTION 14. Transport information

**DOT**

**UN number** UN2265  
**UN proper shipping name** N,N-Dimethylformamide  
**Transport hazard class(es)** 3  
**Packing Group** III  
**Special precautions for user** B1, IB3, T2, TP2  
**Emergency Response Guide Number** 129

**IATA**

**UN number** UN2265  
**UN proper shipping name** N,N-Dimethylformamide  
**Transport hazard class(es)** 3  
**Packing Group** III  
**ERG Code** 3L

**SECTION 15. Regulatory information****North American Inventory Listing**

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
N,N-dimethylformamide	Listed	Not Listed	Listed	Not Listed

**Canadian Workplace Hazardous Materials Information System (WHMIS) Classification**

	Class B3 - Combustible Liquids Class D1B - Toxic Material at $\geq 1\%$ Class D2A - Very Toxic Material at $\geq 0.1\%$ Class D2B - Toxic Material at $\geq 1\%$
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**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS No.	SARA 313 - Threshold Values %
N,N-dimethylformamide	68-12-2	1.0

**SARA 311/312 Hazard Categories**

**Acute Health Hazard** Yes  
**Chronic Health Hazard** Yes  
**Fire Hazard** Yes  
**Sudden Release of Pressure Hazard** No  
**Reactive Hazard** No

**Clean Water Act**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
N,N-dimethylformamide	100 lb	Not Listed

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

This product contains the following U.S. State Right to Know chemicals:

Chemical Name	New Jersey	Massachusetts	Pennsylvania
N,N-dimethylformamide	Listed	Listed	Listed

**U.S. FIFRA Label Information**

This product does not contain any substances regulated as pesticides.

**US Commerce Department - Export Administration Regulations Information**

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

**U.S. Drug Enforcement Administration Information**

This product does not contain any substances regulated under the DEA.

<b>SECTION 16. Other information</b>
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**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet