

**Safety Data Sheet (SDS)** According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

**Issuing Date:** 2015-07-23

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**Version:** 4

## 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** For Research Use Only. Not for Use in Diagnostic Procedures.

### 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  
**Emergency telephone number** In case of emergency call CHEMTREC 1-800-424-9300

## SECTION 2. Hazard(s) identification

### Classification

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

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.

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

Take precautionary measures against static discharge.

Avoid breathing dust/fume/gas/mist/vapors/spray.

Wash face, hands and any exposed skin thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

IF exposed or concerned: Get medical advice/attention

Call a POISON CENTER or doctor/physician if you feel unwell. Take off contaminated clothing and wash before reuse. IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

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)**

MATERIAL IS RAPIDLY ABSORBED THROUGH THE LUNGS, RAPIDLY ABSORBED THROUGH SKIN. Avoid exposure during pregnancy.

**SECTION 3. Composition/information on ingredients**

**Formula** C<sub>3</sub>H<sub>7</sub>NO  
**Molecular Weight** 73.09 g/mol  
**Synonyms** Dimethyl formamide, N,N-Dimethylformamide, DMF

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

**SECTION 4. First-aid measures**

**Eye contact** Rinse thoroughly with plenty of water, also under the eyelids. Consult a physician.  
**Skin contact** Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Consult a physician.  
**Inhalation** Move to fresh air. Consult a physician.  
**Ingestion** Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Consult a physician.

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

Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Irritating to eyes, respiratory system and skin.

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

Treat symptomatically.

**Advice for emergency responders****General advice**

Show this safety data sheet to the doctor in attendance.

**Protection of first-aiders**

Use personal protective equipment Avoid contact with skin, eyes and clothing

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**SECTION 5. Fire-fighting measures**

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**Extinguishing media****Suitable Extinguishing Media**

Water  
Foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry powder

**Specific hazards arising from the chemical**

Thermal decomposition can lead to release of irritating gases and vapors. Most vapors are heavier than air. Vapors may spread along ground and collect in low or confined areas (sewers, basements, tanks).

**Hazardous Combustion  
Products**

Carbon oxides (COx). Nitrogen oxides (NOx).

**Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** 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.

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**SECTION 6. Accidental release measures**

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**Personal precautions, protective equipment and emergency procedures****For non-emergency personnel**

Use personal protective equipment. Remove all sources of ignition. Ensure adequate ventilation. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Other information**

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. 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****Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

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**Methods for cleaning up**

Soak up with inert absorbent material. 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. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Keep away from open flames, hot surfaces and sources of ignition. 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 containers tightly closed in a dry, cool and well-ventilated place. Keep away from open flames, hot surfaces and sources of ignition.
<b>Packaging material</b>	No information available.
<b>Incompatible products</b>	Strong oxidizing agents, Halogens, Nitrates, Reducing agents, Alkali

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

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
<b>Skin and body protection</b>	Wear protective gloves/clothing.
<b>Respiratory protection</b>	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
<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>Color</b>	Colorless
<b>Odor</b>	Characteristic, Mild amine
<b>Odor Threshold</b>	100 ppm

<b><u>Property</u></b>	<b><u>Values</u></b>	<b><u>Remarks</u></b>	<b><u>Method</u></b>
<b>pH</b>	6.7		

<b>Melting point/freezing point</b>	No information available	
<b>Boiling point or 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</b>	No information available	
<b>Lower explosion limit</b>	2.2 °C	
<b>Upper explosion limit</b>	16 °C	
<b>Vapor pressure</b>	0.035 hPa	@ 20 °C
<b>Relative vapor density</b>	No information available	
<b>Density and/or 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>Viscosity</b>	No information available	
<b>Viscosity, dynamic</b>	No information available	
<b><u>Other information</u></b>		
<b>Softening point</b>	No information available	
<b>Molecular Weight</b>	73.09 g/mol	
<b>VOC content</b>	No information available	
<b>Liquid Density</b>	0.094 g/cm <sup>3</sup> @ 20°C	
<b>Bulk density</b>	No information available	

## 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, Reducing agents, Alkali

### Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating gases and vapors: Carbon oxides (CO<sub>x</sub>), Nitrogen oxides (NO<sub>x</sub>)

## SECTION 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	Toxic by inhalation. Harmful by inhalation.
<b>Eye contact</b>	Contact with eyes may cause irritation. Vapor may cause irritation.
<b>Skin contact</b>	Irritating to skin. May be absorbed through the skin in harmful amounts.
<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**

**Symptoms** Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Irritating to eyes, respiratory system and skin.

**Skin corrosion/irritation** Irritating to skin.  
**Serious eye damage/eye irritation** Causes serious eye irritation.

**Sensitization** No information available.

**Mutagenic effects** No information available.

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen

Chemical name	IARC	NTP	OSHA
N,N-dimethylformamide 68-12-2	Group 2A	-	-

**Legend:**

IARC: (International Agency for Research on Cancer) *Group 2A - Probably Carcinogenic to Humans*

**Reproductive toxicity** May cause harm to the unborn child.

**STOT - single exposure** No information available.

**STOT - repeated exposure** No information available.

**Chronic Toxicity** Avoid repeated exposure.

**Target Organ Effects** Liver.

**Neurological effects** No information available.

**Aspiration Hazard** No information available.

**SECTION 12. Ecological information****Ecotoxicity**

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

**Persistence and degradability** Readily biodegradable

**Mobility** Will likely be mobile in the environment due to its water solubility

**Bioaccumulation** Not likely to bioaccumulate.

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

**Other adverse effects**

No information available.

### 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. Dispose of wastes in an approved waste disposal facility.

### SECTION 14. Transport information

#### DOT

<b>UN number</b>	UN2265
<b>UN proper shipping name</b>	N,N-Dimethylformamide
<b>Transport hazard class(es)</b>	3
<b>Packing group</b>	III

#### IATA

<b>UN number</b>	UN2265
<b>UN proper shipping name</b>	N,N-Dimethylformamide
<b>Transport hazard class(es)</b>	3
<b>Packing group</b>	III


### SECTION 15. Regulatory information

#### North American Inventory Listing

This product contains a chemical or chemicals included in the Toxic Substances Control Act (TSCA) Chemical Substance Inventory, Domestic Substances List (DSL) and/or Non-Domestic Substances List (NDSL):

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 %
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N,N-dimethylformamide	68-12-2	1.0
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**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.

**SECTION 16. Other information**

Issuing Date: 2015-07-23  
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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