ImmunoChemistry TECHNOLOGIES LLC

SAFETY DATA SHEET (SDS)

according to Regulation (EC) No. 830/2015 amending 1907/2006

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

1.1	**Product identifier:**		MitoPT® JC-1
1.1a	Other means of identification:		.
1.1b		Alternative product name(s)/ synonyms:	JC-1; 5, 5', 6, 6'-tetrachloro-1, 1', 3, 3'-tetraethylbenzimidazolylcarbocyanine iodide.
1.1c		Product number/Catalog #(s):	684, 6260, 6261
1.1d		Internal identification:	JC1; 5, 5', 6, 6'-tetrachloro-1, 1', 3, 3'-tetraethylbenzimidazolylcarbocyanine iodide
1.2	**Relevant identified uses of the substance or mixture and uses advised against:**		For research use only. Not for use in diagnostic procedures.
1.2a	Brief description of what the substance or mixture is intended to do:		Mitochondrial stain and potentiometric dye for cellular research.
1.3	**Details of the supplier of the SDS:**		.
1.3a		Name:	ImmunoChemistry Technologies, LLC (ICT)
1.3b		Address:	9401 James Avenue South, Suite 155
1.3c		City, State, Zip, Country	Bloomington, MN 55431-2500 USA
1.3d		Phone number:	1-800-829-3194 and 952-888-8788
1.3e		Fax number:	952-888-8988
1.3f		Website:	www.immunochemistry.com
1.3g		Email:	help@immunochemistry.com
1.3h		Contact person at ICT:	Quality Documentation Department
1.4	**Emergency telephone number:**		ICT: 1-800-829-3194 (USA & Canada) or 952-888-8788 world wide; ICT hours are 9 am-5 pm central time USA, Monday through Friday (excluding holidays). Chemtrec 24-hour access within USA and Canada: 1-800-424-9300 or +1 703-527-3887. Collect calls accepted.

Section 2: Hazards identification

2.1	**Classification of the substance or mixture:**		.
2.1a	Product is a:		Substance.
2.1b	Classification according to (EC) No. 1272/2008 {CLP}:		Acute Tox. 4 (oral) H302. Acute Tox. 4 (dermal) H312. Acute Tox. 4 (inhalation) H332. Skin Irrit. 2 H315. Eye Irrit. 2A H319. STOT SE 3 H335.
2.1c	The most important adverse physiochemical, human health, and environmental effects:		Refer to Sections 9-12.
2.2	**Label elements:**		.
2.2a	GHS label elements, including precautionary statements:		.
2.2b		Contains:	.
2.2c	Labeling in accordance with (EC) No. 1272/2008:		.
2.2d	Hazard Pictograms (Hazard Symbols):		 GHS07 Exclamation mark.
2.2e	Signal word:		Warning.
2.2f	Hazard statements:		H302 Harmful if swallowed. H312 Harmful in contact with skin. H315 Causes skin irritation. H319 Causes serious eye irritation. H332 Harmful if inhaled. H335 May cause respiratory irritation.
2.2g	Precautionary statements:		P261 Avoid breathing dust. P264 Wash hands 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/protective clothing/eye protection/face protection. P301+P312+P330 IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth. P302+P352+P312+P362+P364 IF ON SKIN: Wash with plenty of soap

		and water. Call a POISON CENTER or physician if you feel unwell. Take off contaminated clothing and wash it before reuse. P304+P340+P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or physician if you feel unwell. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P332+P313 If skin irritation occurs: Get medical advice/attention. P337+P313 If eye irritation persists: Get medical advice/attention. P405 Store locked up P501 Dispose of contents/container in accordance with all local, regional, national and international regulations.
2.2h	Supplementary precaution statements:	None.
2.3	**Other hazards:**	No additional information available.
2.3a	Does the chemical meet the criteria for PBT or vPvB?	Not applicable.
2.3b	Other hazards which do not result in classification:	No information available.

Section 3: Composition/information on ingredients

3.1	**Substance:**		Item is a substance.	
	3.1a Chemical identity:		MitoPT JC-1	
	3.1b Common name, synonyms, etc.:		Chemical formula: $C_{25}H_{27}Cl_4IN_4$	
	3.1c CAS number and other unique identifiers:	3.1d EC number:	3.1e % Concentration:	3.1f Classification according to (EC) No. 1272/2008 {CLP}:
	47729-63-5	None.	100%	Acute Tox. 4, H302, H312, H332 Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335
3.1g	Chemical identity of any impurity, stabilizing additive, or individual constituent other than the main constituent, which is itself classified and which contributes to the classification (such as product identifier, trade name, identification numbers):		None known.	
3.1h	Other information on the substance:		Chemical Formula: $C_{25}H_{27}Cl_4IN_4$ Molecular Weight: 652 g/mol	
3.2	**Mixture:** The chemical identity and concentration or concentration ranges of all ingredients which are hazardous and are present above their cut-off levels:		Item is a substance, therefore Section 3.2 is not applicable; see Section 3.1.	

Section 4: First aid measures

4.1	**Description of first aid measures:**	If concerned, get medical attention/advice and provide physician with SDS information. Wash contaminated clothing before reuse. Never give anything by mouth to an unconscious person.
4.1a	Inhalation:	Due to the small packaging the risk of inhalation is minimal. Remove to fresh air and keep at rest in a comfortable position for breathing. If not breathing, give artificial respiration. Rinse nose and mouth with water. Get medical attention if any discomfort continues.
4.1b	Skin contact:	Wash skin thoroughly with soap and water for several minutes; continue to rinse for at least 15 minutes. Remove any contaminated clothing and shoes and wash thoroughly before reuse. Get medical attention if any discomfort continues.
4.1c	Eye contact:	Promptly wash eyes with plenty of water while lifting the eyelids. Make sure to remove any contact lenses from the eyes before rinsing. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
4.1d	Ingestion:	NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center or medical professional. Get medical attention if any discomfort continues.
4.2	**Most important symptoms and effects, both acute and delayed:**	Refer to Sections 2 and 11 for most important known symptoms and effects.
4.2a	Inhalation:	Harmful if inhaled. May cause respiratory irritation.
4.2b	Skin contact:	Causes skin irritation.
4.2c	Eye contact:	Causes serious eye irritation.
4.2d	Ingestion:	Harmful if swallowed.
4.3	**Indication of any immediate medical attention and special treatment needed:**	No specific first aid measures noted, but first aid may still be required in case of accidental exposure, inhalation, or ingestion of this product. If in doubt, get medical attention promptly!

4.3a	Notes to physician/first responder:	Treat symptomatically. Refer to Sections 5-8 for advice on personal protective equipment.
Section 5: Firefighting measures		
5.1	**Extinguishing media:**	Use fire-extinguishing media appropriate for the surrounding materials.
5.1a	Suitable extinguishing media:	Water spray, foam, dry powder, or carbon dioxide.
5.1b	Unsuitable extinguishing media:	None known.
5.2	**Special hazards arising from the substance or mixture:**	Thermal decomposition can lead to release of toxic/corrosive gases and vapors.
5.2a	Hazardous combustion products:	Carbon oxides, Nitrogen oxides (NOx), Phosgene.
5.2b	Unusual fire & explosion hazards:	No unusual fire or explosion hazards noted.
5.2c	Protective measures in fire:	Do not enter fire area without proper protective equipment, including respiratory protection. Wear self-contained breathing apparatus and protective suit (see Section 8).
5.3	**Advice for firefighters:**	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
5.3a	Special firefighting procedures:	No specific firefighting procedure given.
5.3b	Special protective equipment and precautions for firefighters:	Wear full protective clothing, including self-contained breathing apparatus, if necessary. The product presents no special fire hazards in normal use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Section 6: Accidental release measures		
6.1	**Personal precautions, protective equipment, and emergency procedures:**	Use protective equipment appropriate for surrounding materials.
6.1a	General release measures:	No specific emergency measures are required other than good laboratory hygiene and safety practices for small spills. Wear suitable protective clothing, gloves and eye or face protection. Consult professional emergency personnel if concerned (see Section 8).
6.1b	Advice for non-emergency personnel; personal precautions, protective equipment and emergency procedures:	No specific emergency measures are required other than good laboratory hygiene and safety practices. Wear suitable protective clothing/gloves/eye/face protection to avoid contact with skin, eyes, and personal clothing; use an approved supplied-air respirator, in case of emergency (also refer to Section 8). Remove all sources of ignition. Ensure adequate ventilation and control dust/mist. Avoid breathing vapors, mist, or gas. Evacuate personnel to safe areas. Wear suitable protective clothing, gloves and eye or face protection to prevent any contamination. Consult professional emergency personnel if concerned.
6.1c	Advice for emergency responders; personal precautions, protective equipment and emergency procedures:	Wear suitable protective clothing, gloves and eye or face protection to avoid contact; use an approved supplied-air respirator, in case of emergency (also refer to Section 8).
6.2	**Environmental precautions:**	Do not allow to enter drains, sewers, or watercourses.
6.3	**Methods and materials for containment and clean up:**	Contain any spills with dikes or absorbent materials to prevent migration and entry into sewers or water sources. Place in a suitable container for disposal in accordance with local waste regulations (see Section 13). Wash spill area thoroughly with plenty of soap and water. Avoid contact with skin or inhalation of spillage, dust, or vapor.
6.4	**Reference to other sections:**	Refer to Sections 8 and 13 for additional information.
Section 7: Handling and storage		
7.1	**Precautions for safe handling:**	Do not handle until all safety precautions have been read and understood. Avoid creation of aerosol/mist/dust. Avoid inhalation of vapors/mist/dust. Prevent contact with skin and eyes. Use appropriate personal protection equipment (PPE). Thoroughly wash hands and contaminated areas with water and soap before leaving the work site. Keep away from sources of ignition.
7.1a	Prevent handling of incompatible substances or mixtures:	Avoid contact with strong acids and strong oxidizers.
7.1b	Advice on general occupational hygiene:	Do not eat, drink, or smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas. Good personal hygiene is necessary. Follow good laboratory hygiene and safety practices.
7.2	**Conditions for safe storage, including any incompatibilities:**	Store refrigerated or frozen. Refer to product label. 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. Avoid spills and release into the environment; keep away from watercourses.
7.3	**Specific end use(s):**	For research use only. Not for use in diagnostic procedures.
Section 8: Exposure controls/personal protection		

8.1	**Control parameters:**	.
8.1a	Occupational exposure limits, such as chemical identity, standard, TWA-8 hours (time weighted average), STEL-15 minutes (short term exposure limit), etc.: WEL = Workplace Exposure Limit. Sk = can be absorbed through skin.	Not available.
8.1b	Appropriate engineering controls:	.
8.1c	Individual protection measures, such as personal protective equipment:	Wear gloves, protective goggles, and lab coat.
8.1d	Safety symbols:	
8.2	**Exposure controls:**	.
8.2a	Process conditions:	Provide eyewash station.
8.2b	Engineering controls:	Ensure that eyewash stations and safety showers are proximal to the workstation location.
8.2c	Ventilation controls:	Provide adequate ventilation.
8.2d	Reference to other sections:	Refer to Section 5 for additional information.
8.2e	Eye/face protection:	Wear approved chemical safety goggles where eye exposure is reasonably probable or face shield if risk of splashing.
8.2f	Skin protection:	Wear apron or protective clothing in case of contact.
8.2g	Hand protection:	Use suitable protective gloves if risk of skin contact.
8.2h	Respiratory equipment:	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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).
8.2i	Other protection:	Wear appropriate clothing to avoid skin contact.
8.2j	Hygiene measures:	DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking, and using the toilet. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink, or smoke. Wash promptly with soap and water if skin becomes contaminated
8.2k	Thermal hazards:	None known under normal conditions of use.
8.2l	Environmental exposure controls:	Not determined.
Section 9: Physical and chemical properties		
9.1	**Information on basic physical and chemical properties:**	.
9.1a	Appearance (physical state, color, etc.):	Powder; dust, varying color.
9.1b	Odor:	No characteristic odor.
9.1c	Odor threshold:	No data available.
9.1d	pH:	Not applicable.
9.1e	Melting point/freezing point (˚C):	No data available.
9.1f	Initial boiling point and boiling range:	No data available.
9.1g	Flash point (˚C):	Not applicable.
9.1h	Evaporation rate:	Not applicable.
9.1i	Flammability (solid, gas):	No data available.
9.1j	Upper/lower flammability or explosive limits:	No data available.
9.1k	Vapor pressure:	No data available.
9.1l	Vapor density (Air =1):	No data available.
9.1m	Relative density:	No data available.
9.1n	Solubility(ies):	Soluble in organic solvents (such as dimethyl sulfoxide, DMSO); insoluble in water.
9.1o	Partition coefficient (N-octanol/water):	No data available.
9.1p	Auto-ignition temperature (˚C):	No data available.
9.1q	Decomposition temperature (˚C):	No data available.
9.1r	Viscosity:	No data available.
9.1s	Explosive properties:	No data available.
9.1t	Oxidizing properties:	No data available.
9.2	**Other information:**	Molecular weight: 652
9.2a	Other physical or chemical parameters:	No additional information available.
Section 10: Stability and reactivity		
10.1	**Reactivity:**	No data available.
10.2	**Chemical stability:**	Stable under recommended handling and storage conditions (see

		Section 7).
10.3	**Possibility of hazardous reactions:**	Hazardous polymerization: no data available.
10.4	**Conditions to avoid:**	Avoid exposure to high temperatures or direct sunlight.
10.5	**Incompatible materials:**	Strong oxidizing substances.
10.6	**Hazardous decomposition products:**	Fire creates: vapors/gases/fumes of: carbon monoxide (CO), carbon dioxide (CO_2), nitrous gases (NOx), phosgene.
Section 11: Toxicological information		
11.1	**Information on toxicological effects:**	.
11.1a	Name:	MitoPT JC-1
11.1b	Acute toxicity:	Oral: Harmful if swallowed. Dermal: Harmful in contact with skin. Inhalation: dust/mist: Harmful if inhaled.
11.1c	Skin corrosion/irritation:	Causes skin irritation.
11.1d	Serious eye damage/irritation:	Causes serious eye irritation.
11.1e	Respiratory or skin sensitization:	May cause respiratory irritation.
11.1f	Germ cell mutagenicity:	Not determined.
11.1g	Carcinogenicity:	Not determined.
11.1h	Reproductive toxicity:	Not determined.
11.1i	STOT-single exposure:	May cause respiratory tract irritation.
11.1j	STOT-repeated exposure:	Not determined.
11.1k	Aspiration hazard:	Not determined.
11.1l	Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact):	May enter by ingestion; skin and/or eye contact; inhalation of vapors/mist/dust.
11.1m	Ingestion:	Harmful if swallowed.
11.1n	Inhalation:	Harmful if inhaled. May cause respiratory irritation.
11.1o	Skin contact:	Harmful in contact with skin.
11.1p	Eye contact:	Causes serious eye irritation.
11.1q	Symptoms related to the physical, chemical and toxicological characteristics:	No specific symptoms noted.
11.1r	Delayed and immediate effects as well as chronic effects from short and long term exposure:	Not determined.
11.1s	Numerical measures of toxicity (such as acute toxicity estimates):	Not determined.
11.1t	Interactive effects:	Not determined.
11.1u	Absence of specific data:	Not applicable.
11.1v	Mixtures:	Not applicable.
11.1w	Mixture vs. substance information:	Not applicable.
11.1x	Classification by National Toxicity Program (NTP):	Not classified.
11.1y	Classification by International Agency for Research on Cancer (IARC):	Not classified.
11.1z	Classification by OSHA 13:	Not classified.
11.1ab	Other information:	None.
Section 12: Ecological information		
12.1	**Toxicity:**	.
12.1a	Name:	MitoPT JC-1.
12.1b	Ecotoxicity (aquatic and terrestrial, where available):	Not determined.
12.2	**Persistence and degradability:**	There are no data on the degradability of this product.
12.3	**Bioaccumulative potential:**	No data available on bioaccumulation.
12.4	**Mobility in soil:**	No data available.
12.5	**Results of PBT and vPvB assessment:**	Not determined.
12.6	**Other adverse effects:**	No data available.
Section 13: Disposal considerations		
13.1	**Waste treatment methods:**	When handling waste, consideration should be made to the safety precautions applying to handling of the product.
13.1a	Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:	Dispose of waste and residues in accordance with local authority requirements. For the safety of persons conducting disposal, recycling or reclamation activities, please refer to the information in Section 8 (exposure controls and personal protection) of the SDS.
Section 14: Transport information		
14.1	**UN number:**	Not applicable.
14.2	**UN proper shipping name:**	Not applicable.
14.3	**Transport hazard class(es):**	Not applicable.
14.4	**Packing group:**	Not applicable.
14.5	**Environmental hazards:**	.
14.5a	Is it environmentally dangerous according to UN Model Regulations (IMDG Code, ADR, RID, and	No.

	ADN)?:	
14.5b	Is it a marine pollutant according to the IMDG code?:	No.
14.6	**Special precautions for user:**	None known.
14.7	**Transport in bulk according to Annex II of MARPOL and the IBC code:**	Not applicable.
14.7a	Other information:	The product is not considered a dangerous good for transport.
14.7b	Classification for other modes of transport:	Contact supplier.
Section 15: Regulatory information		
15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture:**	.
15.1a	Regional safety, health and environmental regulations specific for the product in question:	None known.
15.1b	USA SARA Components (such as 302/311/313):	Not listed.
15.1c	USA Massachusetts Right to Know:	Not listed.
15.1d	USA Pennsylvania Right to Know:	Not listed.
15.1e	USA New Jersey Right to Know:	Not listed.
15.1f	USA California Prop. 65 Components:	Not listed.
15.1g	EU Regulation 1907/2006 {REACH}:	.
15.1h	Annex XIV substances subject to authorization:	Not listed.
15.1i	Substances of very high concern:	Not listed.
15.1j	Approved code of practice:	Classification and labeling of substances and preparations dangerous for supply. Safety data sheets for substances and preparations.
15.1k	Guidance notes:	Workplace exposure limits EH40.
15.1l	EU legislation references:	(EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures {CLP Regulation}. EC 830/2015. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.
15.2	**Chemical safety assessment:**	Not required.
15.2a	Other regulatory information:	None.
Section 16: Other information		
16.1	**Other information:**	.
16.1a	Date of revision:	06/22/2017
16.1b	SDS number and revision:	F17-6254-2-A
16.1c	Supersedes SDS number and revision:	F17-657-2-A
16.1d	Changes made to the previous version of the SDS:	Updated to comply with EC 1272/2008 CLP regulations, EC 830/2015.
16.1e	Key/legend to abbreviations and acronyms used in the SDS:	ACGIH American Conference of Governmental Industrial Hygienists. ADN European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway. ADR The European Agreement concerning the International Carriage of Dangerous Goods by Road. ATE Acute Toxicity Estimate. BCF Bio Concentration Factor. CAS Chemical Abstracts Service. CLP Classification, Labelling and Packaging. CMR Carcinogen, Mutagen or Reproductive toxicant. COD Chemical Oxygen Demand. EC European Commission. EC50 Half maximal effective concentration. EH40 Resource containing the list of workplace exposure limits for use with the Control of Substances Hazardous to Health Regulations. EINECS European Inventory of Existing Commercial chemical Substances. ELINCS European List of Notified Chemical Substances. EU European Union. GHS Globally Harmonized System of Classification and Labelling of Chemicals. H Statement GHS Hazard statement. IATA International Air Transport Association. IBC Intermediate Bulk Container. IC50 Half maximal inhibitory concentration. IMDG International Maritime Dangerous Goods.

		LC50 Median lethal concentration. LD50 Median lethal dose. LogPow logarithm of the octanol/water partition coefficient. MARPOL 73/78 International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. OEL Occupational Exposure Limit. OSHA Occupational Safety and Health Administration (USA). PBT Persistent, Bioaccumulative, and Toxic. PEL Permissible Exposure Limit. RID The Regulations concerning the International Carriage of Dangerous Goods by Rail. SADT Self-Accelerating Decomposition Temperature. SARA Superfund Amendments and Reauthorization Act. SCBA Self-Contained Breathing Apparatus. SDS Safety Data Sheet. STOT Specific Target Organ Toxicity. STOT-RE Specific Target Organ Toxicity - Repeated Exposure. STOT-SE Specific Target Organ Toxicity - Single Exposure. UN United Nations. USA United States of America. vPvB very Persistent very bioaccumulative.
16.1f	Full text of hazard statements and/or precautionary statements not written out in full elsewhere:	All statements were written out in full.
DISCLAIMER:	**This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.**	

END OF SDS

ImmunoChemistry TECHNOLOGIES LLC

SAFETY DATA SHEET (SDS)

according to Regulation (EC) No. 830/2015 amending 1907/2006

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

1.1	**Product identifier:**		10X Assay Buffer
1.1a	Other means of identification:		.
1.1b		Alternative product name(s)/ synonyms:	10X AB, AB, MitoPT Assay Buffer, Assay Buffer
1.1c		Product number/Catalog #(s):	685, 686, 6161, 6259
1.1d		Internal identification:	10X AB, AB, MitoPT Assay Buffer, Assay Buffer
1.2	**Relevant identified uses of the substance or mixture and uses advised against:**		For research use only. Not for use in diagnostic procedures.
1.2a	Brief description of what the substance or mixture is intended to do:		A buffered diluent for use in research laboratory techniques.
1.3	**Details of the supplier of the SDS:**		.
1.3a		Name:	ImmunoChemistry Technologies, LLC (ICT)
1.3b		Address:	9401 James Avenue South, Suite 155
1.3c		City, State, Zip, Country	Bloomington, MN 55431-2500 USA
1.3d		Phone number:	1-800-829-3194 and 952-888-8788
1.3e		Fax number:	952-888-8988
1.3f		Website:	www.immunochemistry.com
1.3g		Email:	help@immunochemistry.com
1.3h		Contact person at ICT:	Quality Documentation Department
1.4	**Emergency telephone number:**		ICT: 1-800-829-3194 (USA & Canada) or 952-888-8788 world wide; ICT hours are 9 am-5 pm central time USA, Monday through Friday (excluding holidays). Chemtrec 24-hour access within USA and Canada: 1-800-424-9300 or +1 703-527-3887. Collect calls accepted.

Section 2: Hazards identification

2.1	**Classification of the substance or mixture:**		.
2.1a	Product is a:		Mixture.
2.1b	Classification according to (EC) No. 1272/2008 {CLP}:		Does not meet the criteria for classification.
2.1c	The most important adverse physiochemical, human health, and environmental effects:		Prolonged skin contact may cause redness and irritation. Refer to Sections 4, 9-12.
2.2	**Label elements:**		None.
2.2a	GHS label elements, including precautionary statements:		.
2.2b		Contains:	.
2.2c	Labeling in accordance with (EC) No. 1272/2008:		.
2.2d	Hazard Pictograms (Hazard Symbols):		None.
2.2e	Signal word:		None.
2.2f	Hazard statements:		None.
2.2g	Precautionary statements:		None.
2.2h	Supplementary precaution statements:		None.
2.3	**Other hazards:**		No additional information available.
2.3a	Does the chemical meet the criteria for PBT or vPvB?		Not applicable.
2.3b	Other hazards which do not result in classification:		Contains sodium chloride and phosphates which are below the threshold for hazard classification, but may cause redness and irritation after prolonged exposure.

Section 3: Composition/information on ingredients

3.1	**Substance:**		Item is a mixture therefore Section 3.1 is not applicable; see Section 3.2.
3.2	**Mixture:** The chemical identity and concentration or concentration ranges of all ingredients which are hazardous and are present above their cut-off levels:		Item is a mixture.
	3.2a Chemical identity:		No ingredients identified for reporting in this section.

Section 4: First aid measures

4.1	**Description of first aid measures:**		If concerned, get medical attention/advice and provide physician with SDS information. Wash contaminated clothing before re-use. Never give anything to an unconscious person.
4.1a	Inhalation:		Remove to fresh air and keep at rest in a comfortable position for breathing. If not breathing, give artificial respiration. Rinse nose and mouth with water. Get medical attention if any discomfort continues.

4.1b	Skin contact:	Wash skin thoroughly with soap and water for several minutes; continue to rinse for at least 15 minutes. Remove any contaminated clothing and shoes and wash thoroughly before reuse. Get medical attention if any discomfort continues.
4.1c	Eye contact:	Promptly wash eyes with plenty of water while lifting the eyelids. Make sure to remove any contact lenses from the eyes before rinsing. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
4.1d	Ingestion:	NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center or medical professional. Get medical attention if any discomfort continues.
4.2	**Most important symptoms and effects, both acute and delayed:**	Contains sodium azide, sodium chloride, and phosphates which are below the threshold for hazard classification, but may cause redness and irritation after prolonged exposure.
4.2a	Inhalation:	May cause coughing or mild irritation.
4.2b	Skin contact:	Prolonged skin contact may cause redness and mild irritation.
4.2c	Eye contact:	May cause temporary eye irritation.
4.2d	Ingestion:	May cause discomfort if swallowed.
4.3	**Indication of any immediate medical attention and special treatment needed:**	No specific first aid measures noted, but first aid may still be required in case of accidental exposure, inhalation, or ingestion of this product. If in doubt, get medical attention promptly!
4.3a	Notes to physician/first responder:	Treat symptomatically. Refer to Sections 5-8 for advice on personal protective equipment.
Section 5: Firefighting measures		
5.1	**Extinguishing media:**	This product is not flammable. Use fire-extinguishing media appropriate for the surrounding materials.
5.1a	Suitable extinguishing media:	Water spray, foam, dry powder, or carbon dioxide.
5.1b	Unsuitable extinguishing media:	None known.
5.2	**Special hazards arising from the substance or mixture:**	This product is not flammable. Product is not explosive. No dangerous reactions known under normal conditions of use.
5.2a	Hazardous combustion products:	None under normal conditions.
5.2b	Unusual fire & explosion hazards:	No unusual fire or explosion hazards noted.
5.2c	Protective measures in fire:	Use protective equipment appropriate for surrounding materials.
5.3	**Advice for firefighters:**	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
5.3a	Special firefighting procedures:	No specific firefighting procedure given.
5.3b	Special protective equipment and precautions for firefighters:	Wear full protective clothing, including self-contained breathing apparatus, if necessary. The product presents no special fire hazards in normal use. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Section 6: Accidental release measures		
6.1	**Personal precautions, protective equipment, and emergency procedures:**	Use protective equipment appropriate for surrounding materials.
6.1a	General release measures:	No specific emergency measures are required other than good laboratory hygiene and safety practices for small spills. Wear suitable protective clothing, gloves and eye or face protection. Consult professional emergency personnel if concerned (see Section 8).
6.1b	Advice for non-emergency personnel; personal precautions, protective equipment and emergency procedures:	No specific emergency measures are required other than good laboratory hygiene and safety practices. Wear suitable protective clothing/gloves/eye/face protection to avoid contact with skin, eyes, and personal clothing; use an approved supplied-air respirator, in case of emergency (also refer to Section 8). Remove all sources of ignition. Ensure adequate ventilation and control dust/mist. Avoid breathing vapors, mist, or gas. Evacuate personnel to safe areas. Wear suitable protective clothing, gloves and eye or face protection to prevent any contamination. Consult professional emergency personnel if concerned.
6.1c	Advice for emergency responders; personal precautions, protective equipment and emergency procedures:	Wear suitable protective clothing, gloves and eye or face protection to avoid contact; use an approved supplied-air respirator, in case of emergency (also refer to Section 8).
6.2	**Environmental precautions:**	Do not allow to enter drains, sewers, or watercourses.
6.3	**Methods and materials for containment and clean up:**	Contain any spills with dikes or absorbent materials to prevent migration and entry into sewers or water sources. Place in a suitable container for disposal in accordance with local waste regulations (see Section 13). Wash spill area thoroughly with plenty of soap and water. Avoid contact with skin or inhalation of spillage, dust, or vapour.
6.4	**Reference to other sections:**	Refer to Sections 8 and 13 for additional information.

Section 7: Handling and storage		
7.1	**Precautions for safe handling:**	Do not handle until all safety precautions have been read and understood. Avoid creation of aerosol/mist/dust. Avoid inhalation of vapors/mist/dust. Prevent contact with skin and eyes. Use appropriate personal protection equipment (PPE). Thoroughly wash hands and contaminated areas with water and soap before leaving the work site. Keep away from sources of ignition.
7.1a	Prevent handling of incompatible substances or mixtures:	Avoid contact with strong acids and strong oxidizers.
7.1b	Advice on general occupational hygiene:	Do not eat, drink, or smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas. Good personal hygiene is necessary. Follow good laboratory hygiene and safety practices.
7.2	**Conditions for safe storage, including any incompatibilities:**	Store in cool place. 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. Avoid spills and release into the environment; keep away from watercourses.
7.3	**Specific end use(s):**	For research use only. Not for use in diagnostic procedures.
Section 8: Exposure controls/personal protection		
8.1	**Control parameters:**	.
8.1a	Occupational exposure limits, such as chemical identity, standard, TWA-8 hours (time weighted average), STEL-15 minutes (short term exposure limit), etc.: WEL = Workplace Exposure Limit. Sk = can be absorbed through skin.	Not in respirable form.
8.1b	Appropriate engineering controls:	.
8.1c	Individual protection measures, such as personal protective equipment:	Wear gloves, protective goggles, and lab coat.
8.1d	Safety symbols:	
8.2	**Exposure controls:**	.
8.2a	Process conditions:	Provide eyewash station.
8.2b	Engineering controls:	Ensure that eyewash stations and safety showers are proximal to the workstation location.
8.2c	Ventilation controls:	Provide adequate ventilation.
8.2d	Reference to other sections:	Refer to Section 5 for additional information.
8.2e	Eye/face protection:	Wear approved chemical safety goggles where eye exposure is reasonably probable or face shield if risk of splashing.
8.2f	Skin protection:	Wear apron or protective clothing in case of contact.
8.2g	Hand protection:	Use suitable protective gloves if risk of skin contact.
8.2h	Respiratory equipment:	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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).
8.2i	Other protection:	Wear appropriate clothing to avoid skin contact.
8.2j	Hygiene measures:	DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking, and using the toilet. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink, or smoke. Wash promptly with soap and water if skin becomes contaminated
8.2k	Thermal hazards:	None known under normal conditions of use.
8.2l	Environmental exposure controls:	Not determined.
Section 9: Physical and chemical properties		
9.1	**Information on basic physical and chemical properties:**	.
9.1a	Appearance (physical state, color, etc.):	Liquid; colorless.
9.1b	Odor:	No characteristic odor.
9.1c	Odor threshold:	Not determined.
9.1d	pH:	6.6-7.0.
9.1e	Melting point/freezing point (˚C):	Not determined.
9.1f	Initial boiling point and boiling range:	<100°C @ 760 mm Hg.

9.1g	Flash point (˚C):	Not applicable.
9.1h	Evaporation rate:	Not determined.
9.1i	Flammability (solid, gas):	Not applicable.
9.1j	Upper/lower flammability or explosive limits:	Not applicable.
9.1k	Vapor pressure:	Not determined.
9.1l	Vapor density (Air =1):	Not determined.
9.1m	Relative density:	Not determined.
9.1n	Solubility(ies):	Soluble in water.
9.1o	Partition coefficient (N-octanol/water):	Not determined.
9.1p	Auto-ignition temperature (˚C):	Not determined.
9.1q	Decomposition temperature (˚C):	Not determined.
9.1r	Viscosity:	Not determined.
9.1s	Explosive properties:	Not determined.
9.1t	Oxidizing properties:	Not determined.
9.2	**Other information:**	None.
9.2a	Other physical or chemical parameters:	None.

Section 10: Stability and reactivity

10.1	**Reactivity:**	No data available.
10.2	**Chemical stability:**	Stable under normal temperature conditions.
10.3	**Possibility of hazardous reactions:**	Hazardous polymerization: will not polymerize.
10.4	**Conditions to avoid:**	To avoid product degradation, avoid exposure to high temperatures or direct sunlight or light.
10.5	**Incompatible materials:**	No data available.
10.6	**Hazardous decomposition products:**	None under normal conditions.

Section 11: Toxicological information

11.1	**Information on toxicological effects:**	.
11.1a	Name:	10X Assay Buffer
11.1b	Acute toxicity:	Not determined.
11.1c	Skin corrosion/irritation:	Not determined.
11.1d	Serious eye damage/irritation:	Not determined.
11.1e	Respiratory or skin sensitization:	Not determined.
11.1f	Germ cell mutagenicity:	Not determined.
11.1g	Carcinogenicity:	Not determined.
11.1h	Reproductive toxicity:	Not determined.
11.1i	STOT-single exposure:	Not determined.
11.1j	STOT-repeated exposure:	Not determined.
11.1k	Aspiration hazard:	Not determined.
11.1l	Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact):	May enter by skin and/or eye contact; inhalation of vapors/mist/dust.
11.1m	Ingestion:	May cause discomfort if swallowed.
11.1n	Inhalation:	In high concentrations, vapors may irritate throat and respiratory system and cause coughing.
11.1o	Skin contact:	Liquid may irritate skin and cause redness.
11.1p	Eye contact:	Spray and vapor in the eyes may cause irritation and smarting.
11.1q	Symptoms related to the physical, chemical and toxicological characteristics:	No specific symptoms noted.
11.1r	Delayed and immediate effects as well as chronic effects from short and long term exposure:	Not determined.
11.1s	Numerical measures of toxicity (such as acute toxicity estimates):	Not determined.
11.1t	Interactive effects:	Not determined.
11.1u	Absence of specific data:	Not applicable.
11.1v	Mixtures:	Item is a mixture.
11.1w	Mixture vs. substance information:	See Section 3 for any substances in the mixture.
11.1x	Classification by National Toxicity Program (NTP):	Not classified.
11.1y	Classification by International Agency for Research on Cancer (IARC):	Not classified.
11.1z	Classification by OSHA 13:	Not classified.
11.1ab	Other information:	None.

Section 12: Ecological information

12.1	**Toxicity:**	.
12.1a	Name:	10X Assay Buffer.
12.1b	Ecotoxicity (aquatic and terrestrial, where available):	No data available.
12.2	**Persistence and degradability:**	There are no data on the degradability of this product.
12.3	**Bioaccumulative potential:**	No data available on bioaccumulation.
12.4	**Mobility in soil:**	The product is soluble in water.
12.5	**Results of PBT and vPvB assessment:**	Not determined.

12.6	**Other adverse effects:**	Not determined.
Section 13: Disposal considerations		
13.1	**Waste treatment methods:**	When handling waste, consideration should be made to the safety precautions applying to handling of the product.
13.1a	Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:	Dispose of waste and residues in accordance with local authority requirements. For the safety of persons conducting disposal, recycling or reclamation activities, please refer to the information in Section 8 (exposure controls and personal protection) of the SDS.
Section 14: Transport information		
14.1	**UN number:**	Not applicable.
14.2	**UN proper shipping name:**	Not applicable.
14.3	**Transport hazard class(es):**	Not applicable.
14.4	**Packing group:**	Not applicable.
14.5	**Environmental hazards:**	.
14.5a	Is it environmentally dangerous according to UN Model Regulations (IMDG Code, ADR, RID, and ADN)?:	No.
14.5b	Is it a marine pollutant according to the IMDG code?:	No.
14.6	**Special precautions for user:**	None known.
14.7	**Transport in bulk according to Annex II of MARPOL and the IBC code:**	Not applicable.
14.7a	Other information:	The product is not considered a dangerous good for transport.
14.7b	Classification for other modes of transport:	Contact supplier.
Section 15: Regulatory information		
15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture:**	.
15.1a	Regional safety, health and environmental regulations specific for the product in question:	.
15.1b	USA SARA Components (such as 302/311/313):	Not listed.
15.1c	USA Massachusetts Right to Know:	Not listed.
15.1d	USA Pennsylvania Right to Know:	Not listed.
15.1e	USA New Jersey Right to Know:	Not listed.
15.1f	USA California Prop. 65 Components:	Not listed.
15.1g	EU Regulation 1907/2006 {REACH}:	.
15.1h	Annex XIV substances subject to authorization:	Not listed.
15.1i	Substances of very high concern:	Not listed.
15.1j	Approved code of practice:	Classification and labeling of substances and preparations dangerous for supply. Safety data sheets for substances and preparations.
15.1k	Guidance notes:	Workplace exposure limits EH40.
15.1l	EU legislation references:	(EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures {CLP Regulation}. EC 830/2015. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.
15.2	**Chemical safety assessment:**	Not required.
15.2a	Other regulatory information:	None.
Section 16: Other information		
16.1	**Other information:**	.
16.1a	Date of revision:	26-May-2017
16.1b	SDS number and revision:	F17-685-2-D
16.1c	Supersedes SDS number and revision:	F17-685-2-C
16.1d	Changes made to the previous version of the SDS:	Reviewed and updated document control numbers.
16.1e	Key/legend to abbreviations and acronyms used in the SDS:	ACGIH American Conference of Governmental Industrial Hygienists. ADN European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway. ADR The European Agreement concerning the International Carriage of Dangerous Goods by Road. ATE Acute Toxicity Estimate. BCF Bio Concentration Factor. CAS Chemical Abstracts Service.

		CLP Classification, Labelling and Packaging. CMR Carcinogen, Mutagen or Reproductive toxicant. COD Chemical Oxygen Demand. EC European Commission. EC50 Half maximal effective concentration. EH40 Resource containing the list of workplace exposure limits for use with the Control of Substances Hazardous to Health Regulations. EINECS European Inventory of Existing Commercial chemical Substances. ELINCS European List of Notified Chemical Substances. EU European Union. GHS Globally Harmonized System of Classification and Labelling of Chemicals. H Statement GHS Hazard statement. IATA International Air Transport Association. IBC Intermediate Bulk Container. IC50 Half maximal inhibitory concentration. IMDG International Maritime Dangerous Goods. LC50 Median lethal concentration. LD50 Median lethal dose. LogPow logarithm of the octanol/water partition coefficient. MARPOL 73/78 International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. OEL Occupational Exposure Limit. OSHA Occupational Safety and Health Administration (USA). PBT Persistent, Bioaccumulative, and Toxic. PEL Permissible Exposure Limit. RID The Regulations concerning the International Carriage of Dangerous Goods by Rail. SADT Self-Accelerating Decomposition Temperature. SARA Superfund Amendments and Reauthorization Act. SCBA Self-Contained Breathing Apparatus. SDS Safety Data Sheet. STOT Specific Target Organ Toxicity. STOT-RE Specific Target Organ Toxicity - Repeated Exposure. STOT-SE Specific Target Organ Toxicity - Single Exposure. UN United Nations. USA United States of America. vPvB very Persistent very bioaccumulative.
16.1f	Full text of hazard statements and/or precautionary statements not written out in full elsewhere:	All statements were written out in full.
DISCLAIMER:	**This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.**	

END OF SDS

ImmunoChemistry TECHNOLOGIES LLC

SAFETY DATA SHEET (SDS)

according to Regulation (EC) No. 830/2015 amending 1907/2006

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

1.1	**Product identifier:**		CCCP
1.1a	Other means of identification:		.
1.1b		Alternative product name(s)/ synonyms:	Carbonyl cyanide 3-chlorophenylhydrazone; [(3-Chlorophenyl)hydrazono]malononitrile. It is at 50 mM in DMSO.
1.1c		Product number/Catalog #(s):	5140, 6257, 6258
1.1d		Internal identification:	CCCP
1.2	**Relevant identified uses of the substance or mixture and uses advised against:**		For research use only. Not for use in diagnostic procedures.
1.2a	Brief description of what the substance or mixture is intended to do:		To depolarize mitochondrial membranes.
1.3	**Details of the supplier of the SDS:**		.
1.3a		Name:	ImmunoChemistry Technologies, LLC (ICT)
1.3b		Address:	9401 James Avenue South, Suite 155
1.3c		City, State, Zip, Country	Bloomington, MN 55431-2500 USA
1.3d		Phone number:	1-800-829-3194 and 952-888-8788
1.3e		Fax number:	952-888-8988
1.3f		Website:	www.immunochemistry.com
1.3g		Email:	help@immunochemistry.com
1.3h		Contact person at ICT:	Quality Documentation Department
1.4	**Emergency telephone number:**		ICT: 1-800-829-3194 (USA & Canada) or 952-888-8788 world wide; ICT hours are 9 am-5 pm central time USA, Monday through Friday (excluding holidays). Chemtrec 24-hour access within USA and Canada: 1-800-424-9300 or +1 703-527-3887. Collect calls accepted.

Section 2: Hazards identification

2.1	**Classification of the substance or mixture:**		.
2.1a	Product is a:		Substance.
2.1b	Classification according to (EC) No. 1272/2008 {CLP}:		Flammable Liquids (Category 4) H227 (USA only) Skin Irritation (Category 2) H315 Eye Irritation (Category 2) H319
2.1c	The most important adverse physiochemical, human health, and environmental effects:		Refer to Sections 9-12.
2.2	**Label elements:**		.
2.2a	GHS label elements, including precautionary statements:		.
2.2b		Contains:	[(3-Chlorophenyl)hydrazono]malononitrile <1% in Dimethyl sulfoxide.
2.2c	Labeling in accordance with (EC) No. 1272/2008:		.
2.2d	Hazard Pictograms (Hazard Symbols):		 GHS07 Exclamation mark.
2.2e	Signal word:		Warning.
2.2f	Hazard statements:		H227 Combustible liquid (USA only). H315 Causes skin irritation. H319 Causes serious eye irritation.
2.2g	Precautionary statements:		P210 Keep away from heat/hot surfaces/sparks/open flames/other ignition sources. No smoking. P264 Wash hands/skin thoroughly after handling. P280 Wear protective gloves/protective clothing/eye protection/face protection. 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. P313 Get medical advice/attention. P321a Specific treatment: see first aid advice on this label. P370+P378 In case of fire: use dry sand, dry chemical or alcohol-resistant foam to extinguish. P403+P235 Store in a well-ventilated place. Keep cool.

		P501 Dipose of contents/container to an approved waste disposal plant.
2.2h	Supplementary precaution statements:	P332+P313 If skin irritation occurs: get medical advice/attention. P337+P313 If eye irritation persists: get medical advice/attention. P362+P364 Take off contaminated clothing and wash it before reuse.
2.3	**Other hazards:**	.
2.3a	Does the chemical meet the criteria for PBT or vPvB?	Not applicable.
2.3b	Other hazards which do not result in classification:	No information available.

Section 3: Composition/information on ingredients

3.1	**Substance:**		Item is a substance.	
	3.1a Chemical identity:		[(3-Chlorophenyl)hydrazono]malononitrile	
	3.1b Common name, synonyms, etc.:		CCCP; Propanedinitrile, 2-[2-(3-chlorophenyl)hydrazinylidene]-; Propanedinitrile, [(3-chlorophenyl)hydrazono]-; Carbonyl cyanide, 3-chlorophenylhydrazone; 2-[2-(3-Chlorophenyl)hydrazinylidene]propanedinitrile.	
	3.1c CAS number and other unique identifiers:	3.1d EC number:	3.1e % Concentration:	3.1f Classification according to (EC) No. 1272/2008 {CLP}:
	555-60-2	209-103-7	<1%	H301 + H311 + H331 Toxic if swallowed, in contact with skin, or if inhaled. Acute Tox 3. H315 Causes skin irritation. Skin Irrit. 2. H319 Causes serious eye irritation. Eye Irrit. 2. H335 May cause respiratory irritation. STOT SE 3.
3.1g	Chemical identity of any impurity, stabilizing additive, or individual constituent other than the main constituent, which is itself classified and which contributes to the classification (such as product identifier, trade name, identification numbers):		Product contains the stabilizer dimethyl sulfoxide (DMSO) at 99-100% w/w. DMSO CAS #67-68-5. DMSO EC #200-664-3.	
3.1h	Other information on the substance:		DMSO: Chemical formula: C_2H_6SO; Molecular Weight: 78.13 g/mol CCCP: Chemical formula: $C_9H_5ClN_4$; Molecular Weight: 204.62 g/mol	
3.2	**Mixture:** The chemical identity and concentration or concentration ranges of all ingredients which are hazardous and are present above their cut-off levels:		Item is a substance, therefore Section 3.2 is not applicable; see Section 3.1.	

Section 4: First aid measures

4.1	**Description of first aid measures:**	If concerned, get medical attention/advice and provide physician with SDS information. Wash contaminated clothing before reuse. Never give anything by mouth to an unconscious person.
4.1a	Inhalation:	Due to the small packaging the risk of inhalation is minimal. Remove to fresh air and keep at rest in a comfortable position for breathing. If not breathing, give artificial respiration. Rinse nose and mouth with water. Get medical attention if any discomfort continues.
4.1b	Skin contact:	Wash skin thoroughly with soap and water for several minutes; continue to rinse for at least 15 minutes. Remove any contaminated clothing and shoes and wash thoroughly before reuse. Get medical attention if any discomfort continues.
4.1c	Eye contact:	Promptly wash eyes with plenty of water while lifting the eyelids. Make sure to remove any contact lenses from the eyes before rinsing. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.
4.1d	Ingestion:	NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center or medical professional. Get medical attention if any discomfort continues.
4.2	**Most important symptoms and effects, both acute and delayed:**	.
4.2a	Inhalation:	None known.
4.2b	Skin contact:	Causes skin irritation.
4.2c	Eye contact:	Causes serious eye irritation.
4.2d	Ingestion:	None known.
4.3	**Indication of any immediate medical attention and special treatment needed:**	No specific first aid measures noted, but first aid may still be required in case of accidental exposure, inhalation, or ingestion of this product. If in doubt, get medical attention promptly!
4.3a	Notes to physician/first responder:	Treat symptomatically. Refer to Sections 5-8 for advice on personal

		protective equipment.
Section 5: Firefighting measures		
5.1	**Extinguishing media:**	Use fire-extinguishing media appropriate for the surrounding materials.
5.1a	Suitable extinguishing media:	Water spray, foam, dry powder, or carbon dioxide.
5.1b	Unsuitable extinguishing media:	None known.
5.2	**Special hazards arising from the substance or mixture:**	Combustible liquid. In a fire or if heated, the container may burst. No dangerous reactions known under normal conditions of use.
5.2a	Hazardous combustion products:	In case of fire, toxic gases may be formed of carbon monoxide (CO), carbon dioxide (CO_2; CO_x). None under normal conditions.
5.2b	Unusual fire & explosion hazards:	No unusual fire or explosion hazards noted.
5.2c	Protective measures in fire:	Use protective equipment appropriate for surrounding materials.
5.3	**Advice for firefighters:**	.
5.3a	Special firefighting procedures:	No specific firefighting procedure given.
5.3b	Special protective equipment and precautions for firefighters:	Wear full protective clothing, including self-contained breathing apparatus, if necessary. The product is combustible.
Section 6: Accidental release measures		
6.1	**Personal precautions, protective equipment, and emergency procedures:**	.
6.1a	General release measures:	Use protective equipment appropriate for surrounding materials. No specific emergency measures are required other than good laboratory hygiene and safety practices for small spills. Wear suitable protective clothing, gloves and eye or face protection. Consult professional emergency personnel if concerned (see Section 8).
6.1b	Advice for non-emergency personnel; personal precautions, protective equipment and emergency procedures:	No specific emergency measures are required other than good laboratory hygiene and safety practices. Wear suitable protective clothing/gloves/eye/face protection to avoid contact with skin, eyes, and personal clothing; use an approved supplied-air respirator, in case of emergency (also refer to Section 8). Remove all sources of ignition. Ensure adequate ventilation and control dust/mist. Avoid breathing vapors, mist, or gas. Evacuate personnel to safe areas. Wear suitable protective clothing, gloves and eye or face protection to prevent any contamination. Consult professional emergency personnel if concerned.
6.1c	Advice for emergency responders; personal precautions, protective equipment and emergency procedures:	Wear suitable protective clothing, gloves and eye or face protection to avoid contact; use an approved supplied-air respirator, in case of emergency (also refer to Section 8).
6.2	**Environmental precautions:**	Do not allow to enter drains, sewers, or watercourses.
6.3	**Methods and materials for containment and clean up:**	Contain any spills with dikes or absorbent materials to prevent migration and entry into sewers or water sources. Place in a suitable container for disposal in accordance with local waste regulations (see Section 13). Wash spill area thoroughly with plenty of soap and water. Avoid contact with skin or inhalation of spillage, dust, or vapor.
6.4	**Reference to other sections:**	Refer to Sections 8 and 13 for additional information.
Section 7: Handling and storage		
7.1	**Precautions for safe handling:**	Do not handle until all safety precautions have been read and understood. Avoid creation of aerosol/mist/dust. Avoid inhalation of vapors/mist/dust. Prevent contact with skin and eyes. Use appropriate personal protection equipment (PPE). Thoroughly wash hands and contaminated areas with water and soap before leaving the work site. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources.
7.1a	Prevent handling of incompatible substances or mixtures:	Avoid contact with strong acids, strong oxidizing substances, strong reducing agents, acid chlorides and phosphorus halides.
7.1b	Advice on general occupational hygiene:	Do not eat, drink, or smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas. Good personal hygiene is necessary. Follow good laboratory hygiene and safety practices.
7.2	**Conditions for safe storage, including any incompatibilities:**	Refer to product label. Store in cool place. 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. Avoid spills and release into the environment; keep away from watercourses.
7.3	**Specific end use(s):**	For research use only. Not for use in diagnostic procedures.
Section 8: Exposure controls/personal protection		
8.1	**Control parameters:**	.
8.1a	Occupational exposure limits, such as chemical identity, standard, TWA-8 hours (time weighted average), STEL-15 minutes (short term exposure	Dimethyl sulfoxide: US WEEL Workplace Environmental Exposure Levels TWA: 250 PPM 8-hours

	limit), etc.: WEL = Workplace Exposure Limit. Sk = can be absorbed through skin.	[(3-Chlorophenyl)hydrazono]malononitrile: None
8.1b	Appropriate engineering controls:	.
8.1c	Individual protection measures, such as personal protective equipment:	Wear gloves, protective goggles, and lab coat.
8.1d	Safety symbols:	
8.2	**Exposure controls:**	.
8.2a	Process conditions:	Provide eyewash station.
8.2b	Engineering controls:	Ensure that eyewash stations and safety showers are proximal to the workstation location.
8.2c	Ventilation controls:	Provide adequate ventilation.
8.2d	Reference to other sections:	Refer to Section 5 for additional information.
8.2e	Eye/face protection:	Wear approved chemical safety goggles where eye exposure is reasonably probable or face shield if risk of splashing.
8.2f	Skin protection:	Wear apron or protective clothing in case of contact.
8.2g	Hand protection:	Use suitable protective gloves if risk of skin contact.
8.2h	Respiratory equipment:	Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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).
8.2i	Other protection:	Wear appropriate clothing to avoid skin contact.
8.2j	Hygiene measures:	DO NOT SMOKE IN WORK AREA! Wash at the end of each work shift and before eating, smoking, and using the toilet. Promptly remove any clothing that becomes contaminated. Use appropriate skin cream to prevent drying of skin. When using do not eat, drink, or smoke. Wash promptly with soap and water if skin becomes contaminated.
8.2k	Thermal hazards:	None known under normal conditions of use.
8.2l	Environmental exposure controls:	Not determined.
Section 9: Physical and chemical properties		
9.1	**Information on basic physical and chemical properties:**	Most of the physical and chemical properties for CCCP in DMSO are unknown. Except for the appearance (physical state and color) listed in box 9.1a, the physical and chemical properties listed below are for Dimethyl sulfoxide (DMSO).
9.1a	Appearance (physical state, color, etc.):	Liquid; yellow.
9.1b	Odor:	Characteristic.
9.1c	Odor threshold:	Not determined.
9.1d	pH:	No data available.
9.1e	Melting point/freezing point (˚C):	18.5°C (65.3°F)
9.1f	Initial boiling point and boiling range:	189°C (372°F) @ 1013 hPa
9.1g	Flash point (˚C):	87°C (189°F) - closed cup - ASTM D 93 (pure DMSO).
9.1h	Evaporation rate:	Not determined.
9.1i	Flammability (solid, gas):	Not applicable.
9.1j	Upper/lower flammability or explosive limits:	Upper explosion limit: 42% (V) Lower explosion limit: 3.5% (V)
9.1k	Vapor pressure:	0.55 hPa (0.41 mmHg) at 20°C (68°F) 4 hPa (3 mmHg) at 50°C (122°F)
9.1l	Vapor density (Air =1):	2.7 (Air=1)
9.1m	Relative density:	1.1g/cm^3 at 20°C
9.1n	Solubility(ies):	Soluble in water.
9.1o	Partition coefficient (N-octanol/water):	log Pow: -1.349.
9.1p	Auto-ignition temperature (˚C):	300 - 302°C (572 - 576°F).
9.1q	Decomposition temperature (˚C):	> 190°C (> 374°F).
9.1r	Viscosity:	2.14 mPa.s at 20°C
9.1s	Explosive properties:	Not explosive.
9.1t	Oxidizing properties:	Not determined.
9.2	**Other information:**	None.
9.2a	Other physical or chemical parameters:	None.
Section 10: Stability and reactivity		
10.1	**Reactivity:**	Stable under normal conditions and use. Forms explosive mixtures with air on intense heating.
10.2	**Chemical stability:**	Hygroscopic. Stable under recommended storage conditions.

10.3	**Possibility of hazardous reactions:**	Hazardous polymerization will not occur. Risk of explosion with: acetylidene, organic halides, perchlorates, acid chlorides, nonmetalic halides, iron (III) compounds, nitrates, fluorides, chlorates, hydrides, perchloric acid, Oxides of phosphorus, Nitric acid, silver compounds, silicon compounds, silanes, acid halides. Exothermic reaction with: boron compounds, oxyhalogenic compounds, potassium, sodium, strong oxidizing agents, phosphorus halides, strong reducing agents, acid chlorides, strong acids, silver salt, nitogen dioxide. Risk of ignition or formation of inflammable gases or vapors with: potassium permanganate.
10.4	**Conditions to avoid:**	Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. Avoid exposure to high temperatures or direct sunlight.
10.5	**Incompatible materials:**	Strong acids. Strong oxidizing substances. Strong reducing agents. Acid chlorides. Phosphorus halides.
10.6	**Hazardous decomposition products:**	Fire creates: vapors/gases/fumes of: carbon monoxide (CO); carbon dioxide (CO_2); nitrous gases (NO_x); hydrogen chloride (HCl); hydrogen cyanide (HCN).
Section 11: Toxicological information		
11.1	**Information on toxicological effects:**	.
11.1a	Name:	[(3-chlorophenyl)hydrazono]malononitrile suspended in Dimethyl sulfoxide (DMSO)
11.1b	Acute toxicity:	LD50 Oral - Rat - 14,500 mg/kg LD50 Dermal - Rat - 40,000 mg/kg
11.1c	Skin corrosion/irritation:	Dimethyl sulfoxide (DMSO) Skin – Mild Irritant - 24 hours exposure with 500 mg rabbit. Eyes – Mild Irritant - 24 hours exposure with 500 mg rabbit. May cause skin irritation with susceptible persons.
11.1d	Serious eye damage/irritation:	Not determined.
11.1e	Respiratory or skin sensitization:	Not determined.
11.1f	Germ cell mutagenicity:	Not determined.
11.1g	Carcinogenicity:	Not determined.
11.1h	Reproductive toxicity:	Not determined.
11.1i	STOT-single exposure:	[(3-chlorophenyl)hydrazono]malononitrile: Category 3 - Respiratory tract irritation.
11.1j	STOT-repeated exposure:	Not determined.
11.1k	Aspiration hazard:	Not determined.
11.1l	Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact):	.
11.1m	Ingestion:	None.
11.1n	Inhalation:	None.
11.1o	Skin contact:	Causes skin irritation.
11.1p	Eye contact:	Causes serious eye irritation.
11.1q	Symptoms related to the physical, chemical and toxicological characteristics:	No specific symptoms noted.
11.1r	Delayed and immediate effects as well as chronic effects from short and long term exposure:	Not determined.
11.1s	Numerical measures of toxicity (such as acute toxicity estimates):	Not determined.
11.1t	Interactive effects:	Not determined.
11.1u	Absence of specific data:	Not applicable.
11.1v	Mixtures:	Not applicable.
11.1w	Mixture vs. substance information:	Not applicable.
11.1x	Classification by National Toxicity Program (NTP):	Not classified.
11.1y	Classification by International Agency for Research on Cancer (IARC):	Not classified.
11.1z	Classification by OSHA 13:	Not classified.
11.1ab	Other information:	None.
Section 12: Ecological information		
12.1	**Toxicity:**	.
12.1a	Name:	Dimethyl sulfoxide (DMSO) and [(3-Chlorophenyl)hydrazono]malononitrile.
12.1b	Ecotoxicity (aquatic and terrestrial, where available):	Dimethyl sulfoxide (DMSO): Fish: LC50 96 hours 34,000 mg/l Pimephales promelas (fat-head minnow). LC50 96 hours 35,000 mg/l Onchorhynchus mykiss (rainbow trout). [(3-Chlorophenyl)hydrazono]malononitrile: Daphnia: LC50 159.11 mg/l Fresh water Daphnia pulex (water flea)

12.2	**Persistence and degradability:**	No data available.
12.3	**Bioaccumulative potential:**	No data available.
12.4	**Mobility in soil:**	Mobility in soil is unknown (the product is soluble in water).
12.5	**Results of PBT and vPvB assessment:**	Not determined.
12.6	**Other adverse effects:**	No data available.
Section 13: Disposal considerations		
13.1	**Waste treatment methods:**	.
13.1a	Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:	When handling waste, consideration should be made to the safety precautions applying to handling of the product. Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with local waste disposal authority. Dispose of waste and residues in accordance with local authority requirements. Please refer to the information in Section 8 (exposure controls and personal protection) of the SDS.
Section 14: Transport information		
14.1	**UN number:**	Not applicable.
14.2	**UN proper shipping name:**	Not applicable.
14.3	**Transport hazard class(es):**	Not applicable.
14.4	**Packing group:**	Not applicable.
14.5	**Environmental hazards:**	.
14.5a	Is it environmentally dangerous according to UN Model Regulations (IMDG Code, ADR, RID, and ADN)?:	No.
14.5b	Is it a marine pollutant according to the IMDG code?:	No.
14.6	**Special precautions for user:**	None known.
14.7	**Transport in bulk according to Annex II of MARPOL and the IBC code:**	Not applicable.
14.7a	Other information:	The product is not considered a dangerous good for transport.
14.7b	Classification for other modes of transport:	Contact supplier.
Section 15: Regulatory information		
15.1	**Safety, health and environmental regulations/legislation specific for the substance or mixture:**	.
15.1a	Regional safety, health and environmental regulations specific for the product in question:	.
15.1b	USA SARA Components (such as 302/311/313):	SARA 311/312: Immediate (Acute) Health Hazard (Dimethyl sulfoxide and [(3-Chlorophenyl)hydrazono]malononitrile).
15.1c	USA Massachusetts Right to Know:	Not listed.
15.1d	USA Pennsylvania Right to Know:	Not listed.
15.1e	USA New Jersey Right to Know:	DMSO (CAS #67-68-5) is listed.
15.1f	USA California Prop. 65 Components:	Not listed.
15.1g	EU Regulation 1907/2006 {REACH}:	.
15.1h	Annex XIV substances subject to authorization:	Not listed.
15.1i	Substances of very high concern:	Not listed.
15.1j	Approved code of practice:	Classification and labeling of substances and preparations dangerous for supply. Safety data sheets for substances and preparations.
15.1k	Guidance notes:	Workplace exposure limits EH40. Workplace Environmental Exposure Levels US WEEL.
15.1l	EU legislation references:	(EC) No. 1272/2008 on the classification, labelling and packaging of substances and mixtures {CLP Regulation}. EC 830/2015. Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.
15.2	**Chemical safety assessment:**	Not required.
15.2a	Other regulatory information:	None.
Section 16: Other information		
16.1	**Other information:**	.
16.1a	Date of revision:	08/17/2017
16.1b	SDS number and revision:	F17-5140-2-C
16.1c	Supersedes SDS number and revision:	F17-5140-2-B
16.1d	Changes made to the previous version of the SDS:	Section 2 (Hazards identification): addition of P statements

		P370+P378, P403+P235, P501, P362+P364, Section 9 (Physical and chemical properties): edits/additional information added to: odor, pH, melting point/freezing point, boiling point, vapor density, solubility(ies), viscosity fields. Minor edits/additions to items: 3.1g, 3.1h, 4.1, 5.2b, 7.1a, 10.1, 10.2, 10.3, 10.5, 11.1a, 11.1b, 11.1c, 12.4, 13.1a.
16.1e	Key/legend to abbreviations and acronyms used in the SDS:	ACGIH American Conference of Governmental Industrial Hygienists. ADN European Provisions concerning the International Carriage of Dangerous Goods by Inland Waterway. ADR The European Agreement concerning the International Carriage of Dangerous Goods by Road. ATE Acute Toxicity Estimate. BCF Bio Concentration Factor. CAS Chemical Abstracts Service. CLP Classification, Labelling and Packaging. CMR Carcinogen, Mutagen or Reproductive toxicant. COD Chemical Oxygen Demand. EC European Commission. EC50 Half maximal effective concentration. EH40 Resource containing the list of workplace exposure limits for use with the Control of Substances Hazardous to Health Regulations. EINECS European Inventory of Existing Commercial chemical Substances. ELINCS European List of Notified Chemical Substances. EU European Union. GHS Globally Harmonized System of Classification and Labelling of Chemicals. H Statement GHS Hazard statement. IATA International Air Transport Association. IBC Intermediate Bulk Container. IC50 Half maximal inhibitory concentration. IMDG International Maritime Dangerous Goods. LC50 Median lethal concentration. LD50 Median lethal dose. LogPow logarithm of the octanol/water partition coefficient. MARPOL 73/78 International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. OEL Occupational Exposure Limit. OSHA Occupational Safety and Health Administration (USA). PBT Persistent, Bioaccumulative, and Toxic. PEL Permissible Exposure Limit. RID The Regulations concerning the International Carriage of Dangerous Goods by Rail. SADT Self-Accelerating Decomposition Temperature. SARA Superfund Amendments and Reauthorization Act. SCBA Self-Contained Breathing Apparatus. SDS Safety Data Sheet. STOT Specific Target Organ Toxicity. STOT-RE Specific Target Organ Toxicity - Repeated Exposure. STOT-SE Specific Target Organ Toxicity - Single Exposure. UN United Nations. USA United States of America. vPvB very Persistent very bioaccumulative. WEEL Workplace Environmental Exposure Levels (USA).
16.1f	Full text of hazard statements and/or precautionary statements not written out in full elsewhere:	All statements were written out in full.

DISCLAIMER:	**This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability, or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.**

END OF SDS