Section 1. Product and Company Identification

Product Name: 2% and 5% Citric Acid Cleaner
(Products DCAC-002 and DCAC-005 Cleaning Agent)

Company Identification: Rockwell Medical
30142 Wixom Rd
Wixom, MI. 48393
800-449-3353
248-960-9009

Section 2. Hazards Identification

Warning. Irritating to eyes. May cause irritation to respiratory tract.

Appearance: White
Physical State: Powder
Odor: None

This product IS classified as hazardous according to 29 CFR1910.1200 (known as CS 2012) amended to conform to the United Nations Globally Harmonized System of Classification and Labeling of Chemicals (GHS). Depending on the intended use, this product is classified as hazardous according to the criteria contained in the Hazardous Products regulations (SOR/2015-17) also known as WHMIS 2015.

NOTE: *Certain products covered under other Canadian legislation, including but not limited to cosmetics, devices, drugs or food (as defined in the Food and Drugs Act), pest control products (as defined in the Pest Control Products Act), consumer products (as defined in the Canada Consumer Product Safety Act), and Hazardous waste (being a hazardous product that is sold for recycling or recovery and is intended for disposal), are NOT subject to the label and SDS requirements of the Hazardous Products Regulations (SOR/2015-17), also known as WHMIS 2015.*

Serious Eye Damage / Eye Irritation Category 2
OSHA Defined Hazard(s) Combustible Dust
DPR Defined Hazard(s) Combustible Dust

Signal Word: Warning
GHS Hazard Pictograms:

Hazard Statements: H319 Causes serious eye irritation
May form combustible dust concentrations in air

Prevention Precautionary Statements:
Wash hands and exposed skin thoroughly with water for several minutes. Wear eye/face protection.

Response Precautionary Statements:
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.

Section 3. Composition/Information on Ingredients

Component	CAS#	Weight %	North American Substance Hazard Class
Citric Acid	77-92-9	99-100	Eye Irrit. 2

Section 4. First Aid Measures

Eye Contact: Immediately flush with plenty of water. After initial flushing, remove contact lenses and continue flushing for at least 15 minutes. If symptoms persist, call a physician.

Skin: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.

Inhalation: Move to fresh air.

Ingestion: Clean mouth with water and afterwards drink plenty of water.

Main Symptoms: Itching. Redness. Burning sensation.

Indications of any immediate medical attention and special treatment needed.
Notes to Physician: Treat symptomatically.

Section 5. Fire Fighting Measures

Flammable Properties
Fine dust dispersed in air may ignite. Risk of ignition followed by flame propagation or secondary explosions should be prevented by avoiding accumulation of dust, e.g. on floors and ledges.

Extinguishing media
Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media No information available

Special Hazards Arising from the substance or mixture

Hazardous Combustion Products: Thermal decomposition can lead to release of irritating gases and vapors, Carbon monoxide (CO) and Carbon dioxide (CO_2).

Specific Hazards Arising from the Chemical: None known

Sensitivity to mechanical impact: No

Sensitivity to static discharge: Yes. (as dust)

Further information: Fine dust dispersed in air may ignite. Dust explosibility class = 1. Weak to moderately explosible.

Advice for firefighters

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.

NFPA

Health	2	Stability and Reactivity	0
Flammability	1	Physical hazard	None known

Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment, and Emergency Procedures
Avoid contact with the skin and eyes. Ensure adequate ventilation. Use personal protective equipment. For personal protection see section 8. Avoid dust formation.

Environmental Precautions
Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system. Prevent product from entering drains.

Methods and Materials for Containment and Cleaning Up
Pick up and transfer to properly labelled containers. Avoid dust formation. Keep in suitable, closed containers for disposal. Aqueous spillage should be neutralized and treated prior to discharge. For disposal see section 13.

Section 7. Handling and Storage

Handling
Wear personal protective equipment. Avoid contact with skin, eyes, and clothing. Handle in accordance with good industrial hygiene and safety practice. Do not breathe vapours/dust. Use only in area provided with appropriate exhaust ventilation. Avoid dust formation in confined areas. Fine dust dispersed in air may ignite. Ensure adequate ventilation. Refer to NFPA61, "Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities".
Do not use if the container is breached or damaged.

Storage
Keep containers tightly closed in a cool, well-ventilated space. Keep in properly labelled containers. Keep at temperature not exceeding 23.9˚C/75˚F at 23.9 relative humidity. Keep away from metals. Keep away from oxidizing agents. Corrosive to metals (as aqueous solution). Keep away from strong bases. Keep away from amines.

Section 8. Exposure Controls/Personal Protection

Exposure Limits
Specific exposure limits have not been identified for this product. However, as an irritant, it is advisable to limit worker exposure to the greatest extent possible.

Biological Limit Values
No biological limit values have been listed for the component(s) in this product.

Appropriate Engineering Controls
Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

Personal Protective Equipment

Eye/Face Protection	Safety glasses with side-shields. If airborne dust concentrations are excessive, wear goggles.
Skin and Body Protection	Long sleeved clothing. Boots. Apron. Impervious gloves. Appropriate body protection should be selected based on activity and possible exposure.
Respiratory Protection	Respirator with a dust filter. In case of insufficient ventilation wear suitable respiratory equipment.

Section 9. Physical and Chemical Properties

Physical state:	Powder
Appearance:	White
pH:	1.8 @ 25°C at 5wt% conc
Solubility in Water:	Complete
Odor:	None

Section 10. Stability and Reactivity

Reactivity	Reactions with metal nitrates may be potentially explosive. Aqueous form is corrosive to copper, zinc, aluminum and their alloys.
Stability	Stable under normal conditions
Possibility of Hazardous Reactions	None under normal processing
Conditions to Avoid	Avoid dust formation. Heat, flames and sparks
Incompatible Materials	Amines. Heavy metals. Strong oxidizing agents. Strong bases.
Hazardous Decomposition Products	Thermal decomposition can lead to release of irritating gases and vapors. Carbon monoxide (CO). Carbon dioxide (CO_2).

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met.

Chemical Name	Weight %	LD50 Oral	LD50 Dermal	LC50 Inhalation
Citric acid	99-100	5400 mg/kg Mouse 11700 mg/kg Rat	>2000 mg/kg bw Rat	

Skin corrosion/irritation	Based on available data, not, or only slightly irritating.
Serious eye damage/eye irritation	Irritant causes serious eye irritation.
Method **Species** **Results**	OECD Guideline 405 (Acute Eye Irritation / Corrosion) Rabbit (New Zealand White) Test data is not provided for 50% solution, but results for 30% solution indicate significant irritation score. [Overall irritation score for 30% solution: 16 of max. 110 (mean (of 3 animals)) (Time point: at 1, 24, 48 or 72 h) (not fully reversible within: 14 days) (fully reversible in 14-21 days) (expert opinion) (score achieved at 1 h)]
Respiratory or skin sensitization	Based on available data, not expected to be a skin or respiratory sensitizer.
Germ cell mutagenicity	Based on available data, negative to test/non-mutagenic.
Carcinogenicity	Based on available data, no evidence of carcinogenicity.
Reproductive toxicity	Based on available data, no evidence of reproductive toxicity.
STOT - single exposure	Based on available data, no toxicity identified.
STOT - repeated exposure	Based on available data, no toxicity identified at highest exposure levels [NOAEL(rats) 4000mg/kg bw/d].
Aspiration hazard	Based on available data, no known aspiration hazard.

Potential health effects

Eyes Avoid contact with eyes. Irritating to eyes.

Skin According to GHS hazard classification criteria, the product is not considered as being a skin irritant. Product dust may cause mild, mechanical irritation.

Inhalation May cause irritation of respiratory tract. Based on the low pH, citric acid would be expected to cause irritation to the respiratory tract, resulting in a higher cough response as the inhalation exposure concentration was increased.

Ingestion Oral exposure is not anticipated under normal working conditions. Health injuries are not known or expected under normal use.

Main Symptoms Itching. Redness. Burning sensation.

Section 12. Ecological

Ecotoxicity

Not classified for aquatic toxicity. Contains no substances known to be hazardous to the environment. Contains no substances known to be not degradable in waste water treatment plants.

Chemical Name	Fresh Water Algae	Acute Fish Toxicity	Daphnia (Water flea)	Effects on micro-organisms	Other
Citric acid	NOEC(8d): 425mg/l (nominal)*	LC50(48h):440mg/L (Leuciscus idus) (nominal)	EC50(24h): 1535mg/L (Daphnia magna) (nominal)		

**Determined by extrapolation (testing of intrinsic toxicity to algae impractical due to nutrient complexing behaviour of citric acid)*

Predicted No Effect Concentrations (PNEC) - Determined by extrapolation

Chemical Name	Aqua (fresh water)	Aqua (marine)	Sewage Treatment Plant	Sediment (fresh water)	Sediment (marine)	Soil
Citric acid	0.44mg/l	0.044mg/l	>1000mg/l	34.6mg/kg sediment dw	3.46mg/kg sediment dw	33.1mg/kg

BCF Bioaccumulation is unlikely. [Logkow < 0].

Chemical Name	log Kow	BCF
Citric acid	-0.2 to -1.8	BCF ~ 3.2 (estimated)

Persistence/Degradability	Readily biodegradable
Mobility	Soluble in water.
PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
Other adverse effects	Nothing specific known.

Section 13. Disposal Consideration

Whenever possible, as rules and regulations allow, please recycle or manage materials to minimize waste.

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Waste Disposal Methods	Dispose of in compliance with the laws and regulations pertaining to this product in your jurisdiction. Rinse water resulting from cleanup should be collected for treatment before disposal. Solutions with low pH-value should be neutralized before discharge.
Contaminated Packaging	Empty containers should be decontaminated and taken for local recycling, recovery or waste disposal.

Section 14. Transport Information

Domestic transport regulations (USA)
DOT Not Regulated

Domestic transport regulations (Canada)
TDG Not Regulated.

Domestic transport regulations (Mexico)
MEX Not regulated.

International transport regulations
ICAO Not regulated
IATA Not regulated
IMDG/IMO Not regulated

Section 15. Regulatory Status

International Inventories
The components of this product are reported in the following inventories:

Chemical Name	TSCA	DSL	NDSL	ICL	EINECS	ELINCS	AICS
Citric acid	Yes	Yes	No	No	Yes 201-069-1	No	Yes

Chemical Name	ENCS ISHL	CHINA	PICCS	KECL	Taiwan	Turkey	NZIoC
Citric acid	Yes (2)-1318	Yes	Yes	Yes KE-20831	Yes	Yes 201-069-1	No

USA

Federal Regulations
Ozone Depleting Substances:
No Class I or Class II material is known to be used in the manufacture of, or contained in, this product.

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 372.

CERCLA/SARA 103-302
Sections 103-302 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product is not known to contain any chemicals which are subject to the reporting requirements of the Act or regulations contained in 40 CFR 103-302.

SARA 311/312 Hazardous Categorization

Refer to the OSHA hazard classification(s) provided in section 2 of this SDS.

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	Yes (when in the form of combustible dust)
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 63)

This product is not known to contain any HAPS.

State Regulations

State Right-to-Know

No known components subject to "Right-To-Know" legislation.

Canada

(NPRI) Canadian National Pollutant Release Inventory

No known component is listed on NPRI.

Mexico

Mexico - Grade Moderate risk, Grade 2

Section 16. Other Information

The information provided on this SDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.