

APEX ENGINEERING PRODUCTS CORPORATION
1241 Shoreline Drive
Aurora, IL 60504
Phone Number: 630-820-8888 Fax: 630-820-8886

SAFETY DATA SHEET

1. IDENTIFICATION OF THE PRODUCT AND COMPANY

Product Identifier

RDO

Aqueous decalcifier.

Relevant identified uses of the product and uses advised against

General use: Aqueous acidic decalcifier for histology/pathology materials.

Uses advised against: Do not mix with strong oxidizing agents or strong caustics.

Manufacturer Information

Apex Engineering Products Corporation, established 1942

1241 Shoreline Drive

Aurora, Illinois 60504



Emergency Phone (Chemtrec): 800-424-9300 (Domestic and Canada)

2. HAZARD IDENTIFICATION

Classification of the substance or mixture

Hazard Classification

Acute Oral Toxicity Category: 4 (OSHA), 5 (UN)

Skin Irritant Category: 3

Eye Irritant Category: 2B

Hazard pictograms:



Signal word: Warning

Hazard statements:

H303: May be harmful if swallowed.

H316: Causes mild skin irritation.

H320: Causes eye irritation.

Precautionary statements:

(Prevention) P280: Wear protective gloves and eye protection.

P281: Use personal protective equipment as required.

(Response) P302+P352: IF ON SKIN: Wash with soap and water.
P321: Specific treatment, see section 4 of this SDS.
P332+P313: If skin irritation occurs, get medical attention.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes, remove contact lenses if present and easy to do, continue rinsing.
P337+P313: If eye irritation persists, get medical attention.

Other hazards: Not applicable.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance: Not applicable.

Mixture: Chemical characterization (preparation).

CAS	PRODUCT NAME: RDO	% by Weight
7647-01-0	Hydrochloric acid	5-9

There are no additional ingredients present which, within the current knowledge of the supplier, are classified as hazardous to the health or the environment. Confidential Business Information (CBI) is not harmonized under the Global Harmonized System (GHS). The full disclosure of this products' ingredients is protected under the Illinois Trade Secret Act. However, the CBI provisions have not compromised the health and safety of our users.

4. FIRST AID MEASURES

Description of first aid measures

After inhalation: Product is not designed to be misted, however, if product mist causes respiratory irritation or distress, move the exposed person to fresh air immediately. If irritation persists, seek medical attention.

After skin contact: Wash affected area with soap and water. If irritation persists, seek medical attention.

After eye contact: Immediately flush eyes with large amounts of water for 15 minutes. Remove contact lenses if present, after the first 5 minutes and continue rinsing. If irritation persists, seek medical attention.

After swallowing: Do NOT induce vomiting, drink milk, egg whites, etc. and seek immediate medical attention.

Most important symptoms and effects, both acute and delayed

Potential health symptoms and effects

Eyes: Causes moderate to severe eye irritation. Symptoms include redness, stinging, tearing and swelling.

Skin: May cause mild to moderate irritation. Repeated and prolonged use may result in drying or cracking of skin or dermatitis.

Inhalation: Inhalation of mist or spray may cause mild irritation of the respiratory tract.

Ingestion: May be harmful if swallowed. May cause gastrointestinal irritation with nausea, vomiting, and diarrhea.

5. FIRE-FIGHTING MEASURES

Extinguishing media

Suitable extinguishing media: Use extinguishing media suitable for the surrounding fire.

Unsuitable media: None known.

Specific hazards arising from the mixture: None known.

Advice for firefighters

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear appropriate protective clothing designated in Section 8. Ventilate the area.

Environmental precautions: Rinse area with copious amounts of water to dilute. Sodium bicarbonate may also be used to absorb and/or neutralize liquid. Dispose of material in accordance with the local, State, Provincial, and Federal regulations for your location.

Methods and materials for containment and cleaning up: Absorb with liquid binding material.

7. HANDLING AND STORAGE

Precautions for safe handling: Observe label precautions. Wear all appropriate protective equipment specified in Section 8. Keep containers closed when not in use.

Condition for safe storage: Keep in cool, dry, ventilated storage areas in closed containers. Transfer only to approved containers having correct labeling. Containers that have been opened should be carefully resealed and kept upright to prevent leakage. The recommended storage temperature is between -12°C/10°F and 81°C/180°F. Keep out of reach of children.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters: Contains no substances with occupational exposure values.

Exposure controls

Engineering: Maintain general industrial hygiene practices. Use normal exhaust, vent to atmosphere.

Personal protective equipment: Facilities storing or using this material should be equipped with an eyewash station. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking or using the lavatory.

Respiratory equipment: None required under normal operating conditions, even when materials vapors and/or mists occur. However, use exhaust hood when working with high vapor concentrations of formaldehyde.

Protective gloves: Recommended however not mandated. Material is non-toxic and can be held in the open hand without risk.

Eye protection: Wear protective goggles or safety glasses during use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance:	Dark
Odor:	Comparable to Almonds
pH:	Unreadable, generally < 3
Freezing/melting point:	-26°C (-15°F)
Initial boiling point:	101°C (214°F)
Flash point:	Not applicable
Evaporation rate:	Not available
Flammability (solid, gas):	Not applicable
Lower explosive limit (LEL)	Not applicable
Upper explosive limit (UEL)	Not applicable
Vapor Pressure:	Not available
Density at 20°C:	Approximately 1
Solubility in Water:	Complete

10. STABILITY AND REACTIVITY

Reactivity: No special reactivity reported, hazardous polymerization will not occur.

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions: None known.

Conditions to Avoid: Extreme temperatures, contact with incompatible materials.

Incompatible materials: Strong alkalis, oxidizing agents, chlorinated products (such as bleach), hydrochloric acid and high concentrations of formaldehyde gases are reported to form a carcinogenic compound Bis(chloromethyl) ether.

Hazardous decomposition: None known.

11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

No toxicity tests have been carried out for this product. Acute toxicity data was estimated based on the toxicity of the individual components contained in this product.

Acute oral toxicity: Product is expected to have low acute oral toxicity.

Acute inhalation toxicity: Product is expected to have low acute inhalation toxicity.

Acute dermal toxicity: Product is expected to have low acute dermal toxicity.

Skin irritation: May cause mild skin irritation.

Eye irritation: Causes moderate eye irritation.

Sensitization: No sensitizing effects known.

Carcinogenic categories: None of the components of this product are listed as carcinogens by AGCIH, IARC, NTP or OSHA.

12. ECOLOGICAL INFORMATION

Aquatic toxicity: Product is expected to have low toxicity to aquatic organisms.

Persistence and degradability: Product is readily biodegradable.

Bioaccumulation potential: Material will not bioaccumulate.

Mobility in soil: The components of this product are water soluble and highly mobile in soil.

Results of PBT and vPvB assessment: No data available.

Other adverse effects: None known.

13. DISPOSAL CONSIDERATIONS

Waste disposal: Unused product can be disposed of down sanitary sewers with water. Used solution may be hazardous as a result of the pre-existing contaminants present in the sample being decalcified. Dispose of material in accordance with the local, State, Provincial, and Federal regulations for your location.

Contaminated packaging: Rinse with water and offer for recycling, if available in your area. Otherwise, dispose as non-hazardous waste.

14. TRANSPORT INFORMATION

UN Number: DOT-Not regulated, IMDG/IATA-Not applicable.

UN proper shipping name: DOT/IATA-Not applicable, IMDG-Not regulated.

Transport hazard class(es): DOT/IMDG/IATA-Not applicable.

Packing group: DOT/IMDG/IATA-Not applicable.

Marine pollutant: No.

Special precautions: Not applicable.

15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for substance or mixture

U.S. Federal Regulations

OSHA Hazard Communication Standard: This material is not classified as hazardous in accordance with OSHA 29 CFR 1910.1200.

OSHA Process Safety Management Standard: Components of this product are not regulated under OSHA PSM Standard 29 CFR 1910.119.

TSCA Status: All components of this product are listed as active on the Toxic Substance Control Act (TSCA) Inventory.

SARA Section 311/312 Hazard Categories: Not classified as hazardous.

SARA 313 Information: Not listed.

Comprehensive Response Compensation and Liability Act (CERCLA): Not reportable.

Clean Air Act (CAA): This product does not contain any chemicals that are listed as Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).

Clean Water Act (CWA): None of the chemicals in this product are listed as Hazardous Substances, Priority Pollutants or Toxic Pollutants under the CWA.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986: This product contains no chemical(s) known to the state of California to cause cancer or other reproductive harm.

Canada

WHMIS Hazard Symbol and Classification: Not applicable/Not classified as hazardous

Domestic Substance List (DSL): All components in this product are listed on the DSL inventory.

Canadian National Pollutant Release Inventory (NPRI): None of the components in this product are listed on the NPRI or are below threshold reporting limits.

16. OTHER INFORMATION

Please use material only as directed. If procedures are not published for your particular application, please call for assistance. Furthermore, RDO is designed to be used by itself or diluted with water and water only. Do not heat. Use RDO at an ambient temperature. Vent solution to atmosphere. Some adverse reactions may occur with some alloys of aluminum, magnesium, zinc and/or other sacrificial/inferior metallurgies. Please consult the manufacturer.

Date of preparation: Creation date for SDS 9/16/2020.

**FOR ADDITIONAL INFORMATION, PLEASE CONTACT OUR MANUFACTURING FACILITY
AT 630-820-8888 OR OUR WEBSITE AT www.rdodecal.com.**

This data is furnished independent of any sales of the product only for your investigation and independent verification. While information is believed to be correct, Apex Engineering Products Corporation shall in no event be responsible for any damage whatsoever, directly or indirectly, resulting from the publication or use of or reliance upon data contained herein. No warranty, either expressed or implied, of merchantability, of fitness, or of any nature with respect to the product, or to the data, is made herein.



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SUPPLEMENTAL INSTRUCTION SHEET

RDO Rapid Decalcifier is an extremely fast chemical solution. The mild acid component of **RDO** along with unique penetrating agents react with calcium in mineralized tissues to form soluble calcium salts. The little extra care required in its use will result in routine sections with superb histological detail and staining characteristics in a fraction of the time required with other decalcifiers. The process can take minutes instead of hours or hours instead of days.

DIRECTIONS FOR IN VITRO DIAGNOSTIC USE

1. Tissues should be thoroughly fixed before decalcification. Most standard fixatives can be used prior to **RDO** use. To insure adequate fixation and decalcification, specimens should be trimmed to less than 1 cm thickness. **Formalin fixation and RDO decalcification should not be combined.** Hydrochloric acid (active ingredient of **RDO**) and formaldehyde vapors have been reported to form a potent carcinogen: bischloromethyl ether. Prior fixation with formalin is permissible. Brief washing in water before **RDO** decalcification is advised.
2. Do not use metallic equipment/cassettes for decalcification. **RDO** can pit or oxidize some metals after long periods of exposure. Decalcified tissues may be placed in metallic equipment after washing.
3. **DO NOT OVER DECALCIFER.** Again, **RDO** will have a very rapid reaction. DO NOT leave bone specimen in **RDO** for several days as is required with other commercial decalcifiers. MOST SPECIMENS CAN BE DECALCIFERED IN FOUR HOURS OR LESS. Use adequate volume of **RDO** to tissue; 20:1 volume ratio of **RDO** is recommended. The key determinations for time required for decalcification are size and density of the specimen. Most mature bones of 1 cm size are decalcified for **4-6 hours**; smaller cancellous bone in **2-4 hours**. Bone biopsies are decalcified in **30-60 minutes**. Teeth and entire femur heads may require overnight treatment. If **RDO** action is too rapid, dilute with distilled or de-ionized water. Good results can be obtained on bone marrow biopsies with a 3:1 dilution (**RDO** to water).
4. Determine the end point of decalcification using standard methods (e.g. X-ray, flexibility, chemical analysis).
5. Proceed with routine processing and embedding. Washing tissue prior to processing is optional.
6. Overexposure to **RDO** can result in poor hematoxylin staining. If this occurs, satisfactory results can be obtained by treating de-paraffinized slides prior to hematoxylin with aqueous saturated lithium carbonate (1-2 minutes) or 10% aqueous sodium bicarbonate (6-8 hours). Poor histological detail/artifacts (swelling, fragmentation) can occur from excess decalcification. Hemosiderin is not removed by **RDO**.

(Continued)

STORAGE AND DISPOSAL

1. Store at room temperature. Keep container closed at all times. Store only in a glass or plastic container. Do not use metal containers, as **RDO** can pit or oxidize some metals after long periods of exposure.
2. After long periods of storage, some change of color or an increase of suspended precipitate may occur. These are normal occurrences and do not affect the decalcifying potential of **RDO**. Aerate prior to use or alternatively, the precipitate may be allowed to settle. Although not necessary, the precipitate can be removed by filtration.
3. The **RDO** solution is biodegradable as received and may be disposed of down regular city sewer systems with water flush. Dispose of according to federal, state and local regulations.

PRECAUTIONS

Material as a whole should be considered non-hazardous under normal use conditions. However, as with most reagents, our recommendations are to avoid extensive or repeated contact with skin. Avoid contact with eyes. Avoid spills as concentrated solutions may discolor/stain some metals. Wash all ex-posed areas with soap and water. If swallowed, contact a physician.

Please do not hesitate to contact us for additional information or review the SDS.