

Team 7494 Circuit Bizurkers



Safety Manual

Updated for the 2020 Season

Dulles High School
550 Dulles Ave, Sugar Land, TX 77478

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Purpose

The purpose of the safety manual is to establish a thorough and successful safety program to be used by any team requiring safety guidelines. The document will frequently be updated over time to account for any recent changes to the safety procedures. This document outlines the expectations of each member of the team and informs them about our safety culture.

Responsibilities

Mentors

All mentors of the team are required to set the standard for safety in the club and to follow the safety rules established by Team 7494 Circuit Bizurkers, Dulles Robotics, the Fort Bend Independent School District, and FIRST.

Safety Captains

There will be two designated safety captains during each FRC season who will be responsible for promoting a safe culture within the club and ensuring that safety protocol is followed throughout contest and meetings. Their specific responsibilities will be to inspect workplaces for unsafe activities, to make sure that all safety rules are being properly followed at all times, and to handle all safety-related documentation for the team.

Members

All members of team 7494 will be required to obey the safety rules at all times as a part of the team. They will be expected to familiarize themselves with the rules and follow the orders of mentors and safety captains. Further, they will be required to complete any training required of them by the team.

Training

Starting with the 2020 FRC season, all team members will be required to complete the safety training sponsored by Underwriters Laboratories. In order to be eligible for a competition, you need to have completed the training. This safety training is necessary in order to ensure that members know the proper expected behavior at competitions and in the workplace. Further, the UL Safety certification informs members about the emergency response procedures in case of emergencies.

Members who have participated in the Engineering program at Dulles High School will additionally receive Occupational Safety and Health Administration 10-hour certifications in General Industry and Construction safety. Students enrolled in the Health Science pathway will receive First Aid and CPR certifications sponsored by the American Red Cross.

Students enrolled in certain classes will also receive CPR and First Aid certifications sponsored by the Fort Bend Independent School District.

Equipment – Eye Protection

Team 7494 issues a set of ANSI approved safety goggles to members at the beginning of each build season. Members are responsible for using these safety goggles in the shop while any hand tool, power tool or machine is being used at all times. Additionally, members are required to practice good safety habits and wear their safety goggles when they are in the pit or working on the robot. Extra goggles are kept at the entrance of every workplace to ensure that anyone who enters the workplace has access to the appropriate PPE.

Furthermore, chemical splash goggles are available at the entrance to the pit and at any location where lead-acid batteries are being stored. These chemical proof goggles are placed in a goggle storage cabinet and are disinfected repeatedly with UV light to reduce risks of skin and eye infections from wearing the goggles.

At all times during contests, members of Team 7494 will be required to wear their provided ANSI approved goggles (School Provided) in the pit area at all times.

Equipment – Hearing and Foot Protection

Hearing Protection

Hearing protection is required to be worn by all members when any device over 70 decibels is being used within the pit or shop including, but not limited to, hand drills, band saws, grinders, CNC machines, drill press, routers, planers, circular saws, table saws, automatic ratchets, staple guns, pneumatic and hydraulic devices, etcetera. The ear plugs which are placed towards the entrance of the workshop are available for use in order to prevent the ears from any harm from loud noises.

Foot Protection

Closed-toed shoes are a requirement throughout the season and at contests for any member working with the robot, lifting heavy objects, or working with tools to ensure the safety of anyone in the shop area and reduce the risk of injury from falling materials and debris. Members working with heavy equipment will be required to wear steel toed boots.

Safety During Build Season

The FRC build season is an intense period that demands the physical and mental skills of all members to manufacture and develop a functioning robot, pit area, and contest plan. Thus, developing and upholding safety procedures throughout the build season are vital. As previously mentioned, there are strict rules within the workshop and around the workspace that every student must uphold. To ensure safety during the build season, the team will follow these rules.

General Expectations

- No running
- No horseplay
- Clear all walkways to allow two-way traffic/robot flow
- Keep the work area clean
- Treat all cuts and burns appropriately
- Follow the correct protocol based on the situation
- Wear safety goggles when necessary
- Be aware and attentive of the surroundings
- Unplug/cut power to all machine tools (i.e. planer, disk sander, table saw, miter saw, etc.) when not in use
- Wear the appropriate clothing and footwear
- Report any and all injuries to the appropriate individual (mentor, safety officer)
- Only operate machinery with appropriate safety guards

- Wear hearing protection around loud machinery or when there is risk of ear damage
- 15 minutes before the end of each meeting will be dedicated to cleanup.
 - All tools must be packed away and the workspace must be clean before shutting down for the day

General Hand Tool Safety

- Check the condition of the tool
 - If damaged, decommission tool immediately and report damage to a mentor
- Only work on hard surfaces
- Do not operate hand tools towards yourself
- Be mindful of how you hand tools to others (i.e. do not hand sharp tools with the blade pointed towards someone)
- Always return tools to their proper location when not in use

General Power Tool Safety

- Ensure you are wearing the appropriate PPE
- Let the machine come to a complete stop before doing any of the following: measuring, adjusting, cleaning, leaving the machine
- When applicable, remove the chuck key
- Do not operate machinery unless you are being supervised/spotted by another member/mentor
- Keep all body parts away from blades
- Know how to stop a machine in the event of an emergency
- Do not operate a machine if feeling sick

Team Clothing Policy

Purpose: Brief overview of clothing expectations for members conducting work inside the shop.

Footwear: All members are required to wear close-toed shoes to ensure minimal damage to the feet in the event a large object was to fall onto them.

Torso Clothing: Members must refrain from wearing long, baggy clothing that has the potential of getting caught on machinery.

Jewelry: All jewelry is strictly prohibited in the shop, including watches, necklaces, rings, etc.

Hair: All hair must be tied back/secured depending on length. This is at the discretion of the Safety Captain

Competition Safety

Pit Safety

- No more than five (5) individuals at the pit at all times.
- Pit must be clean at all times
 - Keep floor free from debris
- Safety goggles must be worn at all times
- Close-toed shoes must be worn at all times
- Gloves worn as necessary
- While robot is being worked on, only the necessary people needed should be present; all other individuals should stay away as to not crowd the pit
- No food/drink
- Use all tools and equipment appropriately

Robot Lifting

- Do NOT lift the robot alone as you can injure yourself; at least two people should directly lift the robot
- Make sure the Robot is safe to move by checking the following:
 - Check to see the robot is powered off
 - Make sure there are no loose/dangling parts on the robot. If there are, place them off to the side.
- Wear Gloves
- Make sure the people moving the robot know the destination path.
Communicate this clearly beforehand.
- Ensure the path is clear

Proper Lifting Technique

- Make sure somebody is supervising the people lifting the robot to ensure the safety of all of the people.
- Make sure each person that is lifting the robot is wearing PPE (gloves, safety glasses, etc.)
- Lift with your legs and make sure your body is straight in order to minimize risk of injury.
- Keep the robot close to your body

Locations of Safety Equipment

Fire Extinguisher

The fire extinguisher is located at the entrance to the shop and in the main classroom. By having two available in our two main working areas, we ensure that in the event there is a fire, there is ample time to retrieve and use the fire extinguisher.

Defibrillators

The defibrillator is located right outside the main classroom's hallway. In the event it is needed, all members are aware of its location and can retrieve it easily.

First-Aid Kits

The first-aid kits are located in a designated first-aid cabinet in the main work area, in the office directly adjacent to the workshop, and in the pit area. All three first-aid kits are appropriately labeled for noticeability and ease of access. In case of an injury, all students are required to know the location of each first-aid kit and how to administer basic first-aid, such as disinfecting a cut and applying small bandages.

Safety Checklist

At each competition:

- Set up all safety materials
 - Fire extinguishers, binders
 - Put up safety posters
 - Place battery acid kits in their appropriate locations
- Charge batteries and record charge levels on the safety log
- Before robot leaves for match:
 - Ensure the robot is safe (what does this even mean?)
 - Connect robot to a charged battery
- Before robot returns from match:
 - Vacuum the pit flooring to ensure there are no sharp objects present
 - Inspect pit area to ensure it is safe
- After robot returns from match
 - Inspect the robot battery to ensure it is intact
 - Disconnect the battery from the robot and put it to charge if needed
- End of competition day
 - Disconnect all battery chargers and other electronic equipment
 - Clean up the pit area

Emergency Procedures - Chemical

- Vacate the affected area at once, closing all doors behind you to prevent further contamination of other areas until the spill is contained. (Do not lock all doors)
- Based on the nature of the hazard, attempt to clean-up if you are trained to do so, and if appropriate personal protective equipment is readily available. If you are unable to clean up the chemical properly, contact a local emergency number (such as 911).
- If you are cleaning the spill/leak yourself, dispose of the waste properly. Do not wash chemicals down interior or exterior drains.
- If the spill/leak has the potential to cause a life or health hazard in the building, activate the fire alarm manual pull station and evacuate the building. Contact a local emergency number (such as 911). When reporting, be specific about the nature of the involved material and exact location.
- Anyone who may be contaminated by the spill should avoid contact with others as much as possible. If trained to do so, start the decontamination process.
- It is recommended to have MSDS (Material Safety Data Sheets) available for the emergency personnel.

Emergency Procedures – Fire Explosions

Always know the locations of fire extinguishers, fire exits and manual pull stations in your area and how to use them. In case of fire, immediately pull the closest fire alarm manual pull station and call a local emergency number, such as 911. Be aware of when it is appropriate to fight or flee from a fire.

- Ensure evacuation procedures are followed by all building occupants.
- If you have received proper hands-on training and the fire is small, contained, and extinguishable within 15 seconds, activate the closest fire extinguisher and direct the charge towards the base of the flames.
- Larger, uncontrollable fires should not be approached.
- Close all doors to confine the fire and reduce oxygen. DO NOT LOCK DOORS!

NOTE: Should you become trapped inside a building during a fire and a window is available, place an article of clothing (shirt, coat, etc.) outside the window as a marker for rescue crews. If no window is in the room, stay near the floor where air will be less toxic. Shout at regular intervals to alert emergency crews of your location. DO NOT PANIC!

Emergency Procedures – Gas

Natural gas leaks, with an odor in the building, may occur and may bring danger of fire and/or explosion. Natural gas rises will often be outside because most gas lines are outside of a building. Utility supplied natural gas is mixed with an odorant to ease in detection.

If you smell gas inside or outside a building:

- Call your local emergency number (such as 911)
- Evacuate to a safe area if advised to do so by the emergency responders.
- If the odor of gas is faint, open windows and doors and evacuate.
- If the odor of gas is significant, evacuate the building to a safe area.
- Move upwind from any smell of gas.
- If people are unconscious, do not enter the area, but wait for emergency personnel.

Emergency Procedures – Medical

If you notice a medical emergency, evaluate the situation and dial 911. The Texas Good Samaritan Act which states:

“A person who in good faith administers emergency care at the scene of an emergency or in a hospital is not liable in civil damages for an act performed during the emergency unless the act is willfully or wantonly negligent.”

Initial Actions - Check/Call/Care

- **Check** the immediate scene for Hazards
- **Check** on the victim's condition
- **Call** or send another person for help
- **Care** for the victim(s), address most serious first

Emergency Procedures – Heart Attack/Cardiac Arrest

Signs and Symptoms

- Unconscious, unresponsive with no pulse
- Chest pain, middle of chest and possibly in left arm & neck
- Shortness of breath
- Sweating
- Loss of consciousness
- Weakness on one side of body

First Aid

- **Call** a local emergency number (911)
- **Check** to see if patient is breathing
- **Check** pulse
- If no pulse or breath, start CPR. Red Cross now recommends constant heart massage. No breaths. Push hard and fast. Place your hands, one on top of the other, in the middle of the chest. Use your body weight to help you administer compressions that are at least 2 inches deep and delivered at a rate of 100-120 compressions per minute
- If an Automatic Emergency Defibrillator (AED) is available, turn it on and follow voice prompts.

Emergency Procedures – Stroke

If a Stroke is suspected, think **F.A.S.T.**

- **Face:** Ask the person to smile. Does one side of the face droop?
- **Arm:** Ask the person to raise both arms. Does one arm drift downward?
- **Speech:** Ask the person to repeat a simple sentence, such as “The sky is blue.” Is speech slurred? Can the person repeat the sentence correctly?
- **Time:** Try to determine when the signals started. Report the time of onset to EMS personnel.

If these symptoms are present, call 911 immediately.

DO NOT:

- Let the individual fall asleep
- Give them medication, food, or drink

Emergency Procedures – Seizure

Signs & Symptoms

- Uncontrolled muscle contractions caused by possible head injury, drug overdose, epilepsy, fever, or acute infection

First Aid

- Call a local emergency number, such as 911.
- Place patient on floor, make sure the immediate area around patient is free of objects/obstacles, DO NOT restrain.
- Try to help maintain open airway by supporting the person in side-lying position
- DO NOT put anything in patient's mouth, including your fingers
- After seizure, DO NOT try to awaken patient
- Note time of onset and behavior during seizure, as well as time that seizure ends if emergency personnel have not arrived

Emergency Procedures – Choking

Signs & Symptoms

- Unable to talk or cry out
- Victim clutches at throat

First Aid

- Call local emergency number, such as 911
- If patient is coughing, do nothing but assist them by patting them in their back
- If a patient is unable to cough and the airway is completely obstructed, use five abdominal thrusts, pause, and ask if the patient is still choking. Repeat until the airway is clear.
- Wait for emergency personnel to arrive

Emergency Procedures – Bleeding

Signs and Symptoms

- External – uncontrolled bleeding
- Internal – patient complaining of pain in stomach or chest. Patient is dizzy when standing, pulse rate fast, above 100

First Aid

- Call local emergency number (such as 911)
- External – Place direct pressure over the wound, keep wound as clean as possible
- Elevate a bleeding extremity above the level of the heart. DO NOT apply a tourniquet
- Internal – Lay patient down with feet raised, protect airway, keep patient calm

Emergency Procedures – Battery Acid Leaks

Dangers of Battery Acid

- Contaminate the soil
- Corrosive to skin
- Stain clothing

Lead Acid Battery Spill

In case of a lead acid battery spill, we have prepared:

- PVC gloves to handle the batteries
- Two buckets and plastic bags to dispose of the batteries
- Baking soda to neutralize battery acid

Steps to Clean Up Battery Acid

1. Double-bag the leaking battery in the plastic bag
2. Manage the clean-up material as hazardous waste by placing it in the spill bucket
3. Clean the spilled battery acid by neutralizing it with baking soda
4. Wipe away the battery acid with a cloth or disposable rag

Emergency Procedures – Active Shooter

If you witness any armed individual on campus at any time or if an individual is acting in a hostile or aggressive manner, immediately contact a local emergency number (such as 911).

- The recommended action is **Run, Hide, Fight**.
- If it is possible to flee the area safely and avoid danger, do so.
- If flight is impossible, lock all doors and secure yourself in your space and attempt to barricade the door.
- If you can do so safely, get all persons on the floor and out of the line of fire.
- Hide behind or under obstacles and remain silent.
- Attempting to overcome the armed subject with force is a last resort that should only be initiated in the most extreme circumstances.
- Remember, there may be more than one shooter.
- Wait for the “all clear” instructions from uniformed law enforcement authorities.
- Be careful not to make any changes to the scene of the incident as law enforcement authorities will investigate the area later.

Emergency Procedures – Severe Weather

Tornado

Tornadoes occur suddenly, typically without warning. Evacuation is not advisable and preparation time is limited. A simple severe weather acronym to remember is “DUCK”.

- **DOWNSTAIRS** to the Lowest Level of the Building You Are In
- **UNDER** something Sturdy
- **CENTER** portion of the Structure, Preferably in a Small Bathroom or Closet
- **KEEP** away from glass or other flying debris

Flood

The Houston area is prone to seasonal and flash flooding during times of heavy rains. If there is a flood alert or if you see flooding conditions arise, get to a sheltered location as quickly and safely as possible and wait for further instructions. If you find yourself trapped, contact an emergency number, such as 911.

Hurricane

- Stay connected to the radio/news in order to find up to date information and weather updates.
- Find a safe and secure building to take shelter in. Do not stay near windows.
- Keep any and all electronic devices away from water. Turn off unnecessary breakers if possible.

- Stay away from standing water as it can be contaminated with chemicals and/or waterborne pathogens.
- Do NOT attempt to travel through water, whether by foot or in vehicles. Standing water is often much deeper than it seems and rushing water can sweep people and vehicles away.
- If water begins to enter your shelter, move to higher ground if possible.

Power Outage

- Plan for batteries and other alternatives to meet your needs when the power goes out.
- Review the supplies that are available in case of a power outage. Have flashlights with extra batteries for every household member. Have enough nonperishable food and water.
- Turn off or disconnect appliances, equipment, or electronics. Power may return with momentary “surges” or “spikes” that can cause damage.

Fires

- In the event of a large fire, yell “FIRE!” out loud several times and pull the closest fire alarm if possible in order to warn others about the situation if the alarm has not been triggered already.
- Evacuate to a safe distance outside the building of the workplace or competition. The classroom and workplace should include maps which must be followed while evacuating.

- During competition, a precise evacuation route map should be located in the pit which must be followed
- NEVER use elevators when escaping, use stairs instead.
- If the fire blocks the main exit route, use the alternate route to immediately get out.
- Never open doors that are warm to the touch during fires.
- If there is smoke present, get down low and go under the smoke towards the exit.
- If exit routes are completely blocked, stay inside and locate a window to signal for help.
- When outside, meet up at the designated meeting area and ensure all members are present.
- IF CLOTHES CATCH ON FIRE: STOP, DROP AND ROLL
 - **Stop** what you are doing
 - **Drop** down to the ground and cover your face
 - **Roll** around on the floor until flames are out
 - Then, cool the burned skin with water for 3-5 minutes

Battery Safety

All batteries used in the FRC Competition robots are 12V Lead-Acid batteries which contain Sulfuric Acid. Sulfuric Acid is a corrosive compound that can explode in certain conditions. Additional information about this compound can be found in the team's MSDS sheets.

Safe Battery Techniques

- Always carry the battery with two hands
- Never carry the battery by the wires
- Thoroughly inspect the battery for the presence of any cracks. Even if a crack is small, it could cause a possible battery acid leak, so decommission any damaged batteries immediately.

Battery Spill Procedure

- If the spilled contents of the battery have made any contact with skin, immediately flush the area with plenty of water.
 - The pit contains distilled water which can be used in case of emergencies to flush areas of the skin until the affected individual is taken to the nearest water tap/ fountain

Battery Spill Cleaning:

1. Locate the nearest available battery spill kit
2. Put on the chemical resistant goggles, gloves and apron found inside the kit
3. Open the container of baking soda and pour all over the battery and around the leak area. Work from outside in.
4. Pick up the battery and place it in one of the chemical resistant bags located in the spill kit. Seal bag with battery tightly and place it in a large trash bag.
5. Spread more baking soda onto the area with battery spill until the entire area stops fizzing.
6. Sweep up the baking soda near the spill and dispose directly into the large trash bag.
7. Rub baking soda on the gloves in order to neutralize any acid that might have remained on them.
8. Carefully remove the gloves without touching the exterior side of them. Place the used gloves in the large trash bag as well.
9. Place the duster, broom and additional equipment back into the spill kit.

Battery Disposal:

Interstate Battery Company properly collects and disposes of any batteries that FIRST teams decide to get rid of. Further, other automotive retailers can also responsibly dispose of any batteries used by FRC teams.

Appendix

| | |
|--|------------|
| Example Battery Spill Kit..... | Appendix A |
| Injury Logs..... | Appendix B |
| Battery Logs..... | Appendix C |
| MSDS Sheets..... | Appendix D |
| Sample Member Emergency Info Card..... | Appendix E |

Appendix A – Example Battery Spill Kit

Appendix B – Injury Logs

Appendix C – Battery Logs

Appendix D – Lead-Acid Battery MSDS



Batteries Plus, LLC
1325 Walnut Ridge Drive
Hartland, WI 53029

SAFETY DATA SHEET (SDS)

LEAD ACID BATTERY WET, FILLED WITH ACID






The information and recommendations below are believed to be accurate at the date of document preparation. Batteries Plus, LLC makes no warranty or merchantability or any other warranty, express or implied, with respect to this information and assumes no liability resulting from its use. This SDS provides guidelines for safe use and handling of product. It does not, and cannot, advise all possible situations. All specific uses of this product must be evaluated by the end user to determine if additional safety precautions should be taken.

The following information is provided as a courtesy to Batteries Plus customers.

SECTION 1 – IDENTIFICATION

| | |
|--------------------------------|---|
| Product Name | Lead Acid Battery Wet, Filled With Acid |
| Common Name(s) | Starting Lighting Ignition (SLI) – Battery |
| Synonyms | SLI |
| DOT Description | Wet Battery, spillable |
| Chemical Name | Lead Acid Battery, Secondary Battery |
| Distributed By | Batteries Plus, LLC |
| Address | 1325 Walnut Ridge Drive, Hartland, WI 53029 |
| Emergency number | CHEMTREC 1-800-424-9300 |
| International Emergency Number | CHEMTREC +1 703-741-5970 (Collect) |

SECTION 2 – HAZARD(S)

| GHS Classification: | | |
|---|---|---|
| Health | Environmental | Physical |
| Acute Toxicity – Category 4 | Aquatic Chronic – 1 | Explosive Chemical, Division 1.3 |
| Skin Corrosion – Category 1A | Aquatic Acute - 1 | |
| Eye Damage – Category 1 | | |
| Reproductive – Category 1A | | |
| Carcinogenicity (lead) – Category 1B | | |
| Carcinogenicity (arsenic) – Category 1A | | |
| Carcinogenicity (lead mist) – Category 1A | | |
| Specific Target Organ Toxicity (repeated exposure) – Category 2 | | |
| GHS Label Elements: | | |
|    |  |  |
| Signal Word: DANGER! | | |

Emergency Overview - May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant women exposed to internal components may experience reproductive/developmental effects.

Appendix D – Polycarbonate MSDS



Safety Data Sheet (SDS) SDS-106-Polycarbonate

SECTION 1: PRODUCT AND COMPANY INFORMATION

HoeHN Plastics Inc., 11481 West, County Road 925 South, Poseyville, IN 47633 (812) 874-2612

Product Family: Polymer

Trade Names: Polycarbonate - PC

Other Means of Identification: CAS # 103598-77-2

Recommended Uses: Easily molded and thermoformed into colored products that are both temperature and impact resistant.

Emergency Phone Number
for Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
1-800-424-9300 / +1 703-527-3887 CCN702922

SECTION 2: HAZARD IDENTIFICATION

| EMERGENCY OVERVIEW | | | |
|---------------------------|------------------------------|----------------------------|---------------|
| GHS CLASSIFICATION | Non-hazardous | HMIS | |
| Physical State | Solid | HEALTH | 0 |
| Color | Typically clear or off-white | FLAMMABILITY | 1 |
| Odor | Waxy, mild | PHYSICAL HAZARD | 0 |
| | | PERSONAL PROTECTION | See Section 8 |

Primary Routes of Exposure

Eyes or skin contact

Potential Health Effects

Acute Effects

Inhalation

Health injuries not expected. Not a probable route of exposure under ordinary conditions.

Skin contact

Health injuries not expected. Possible mechanical irritation.

Eye contact

Health injuries not expected. Possible mechanical irritation from dust or powder.

Ingestion

Health injuries not expected. Not a probable route of exposure.

Chronic effects

Ongoing exposure may aggravate acute effects

Carcinogenicity

See Section 11

Medical conditions aggravated by long term exposure

Ongoing exposure may aggravate acute effects .

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| | | |
|-------------------|--------------------|--------------------|
| Component: | CAS Number: | Percentage: |
| Polycarbonate | 103598-77-2 | 100 (+/-) |

SECTION 4: FIRST AID MEASURES

| | |
|----------------------|---|
| Skin Contact: | If in contact with solid material, wash with soap and water. If in contact with molten material, submerge injured area in cold water. Do not attempt to remove material adhering to the skin. Get medical attention if irritation develops or persists. |
| Eye Contact: | Flush eyes with plenty of water. Get medical attention if irritation develops or persists. |
| Inhalation: | This material is not likely to be hazardous by inhalation. Consult a physician if symptoms develop or persist. |
| Ingestion: | Not a probable route of exposure. |

SECTION 5: FIRE FIGHTING MEASURES

Use water fog, dry chemical, carbon dioxide or foam as appropriate for materials in surrounding fire. Avoid using direct streams of water on molten burning material as it may scatter and spread the fire. Melts in proximity to fires resulting in slippery floors and stairs. Static charges or on powders or powders in liquids may ignite combustible atmospheres. Airborne dusts of this product in an enclosed space and in the presence of an ignition source may constitute an explosion hazard. See NFPA Bulletin 654, "Standard for the Prevention of Fire and Dust Explosions from the Manufacturing Processing, and Handling of Combustible Particulate Solids," for safe handling procedures. As in any fire, wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus and full protective clothing. Watch footing on floors and stairs because of possible spreading of molten material.

Appendix D – Sodium Bicarbonate MSDS



www.natrium.com

SODIUM BICARBONATE Safety Data Sheet

Page 1 of 3

1. IDENTIFICATION

Product name: Sodium bicarbonate

Synonyms: Sodium hydrogen carbonate; Baking soda; Bicarbonate of soda; Sodium acid carbonate; Carbonic acid, monosodium salt.

Manufacturer:

Natrium Products, Inc.
58 Pendleton Street
Cortland, NY 13045
USA

Telephone numbers:

General inquiries: (607) 753-9829
Emergencies (US and Canada):
CHEMTREC (Customer Number 724993)
(800) 424-9300 or 703-527-3887 (collect)

Recommended uses:

Food additive; pharmaceutical ingredient; water treatment; raw material for paper and chemical manufacturing; animal feed additive; pH control.

2. HAZARD IDENTIFICATION

There are no appreciable health or environmental effects associated with this material.

Hazard classification: Not classified

Label elements: No applicable labeling

Other potential health effects:

Eyes: Direct contact may cause irritation due to abrasion.

Skin: Not a skin irritant.

Inhalation: No known effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name: Sodium hydrogen carbonate

Chemical formula: NaHCO_3

Synonyms: Sodium bicarbonate; Baking soda; Bicarbonate of soda; Sodium acid carbonate; Carbonic acid, monosodium salt.

CAS Number: 144-55-8

Concentration (% by Weight): 100%

4. FIRST AID MEASURES

Eye contact: Irrigate with flowing water immediately and continuously for 15 minutes. Consult a physician if necessary.

Skin contact: Wash off in flowing water or shower. If necessary, consult physician.

Ingestion: Do not induce vomiting. Seek medical attention immediately if overdose is taken.

Note to physician: Large doses, particularly in patients with renal insufficiency, have produced systemic alkalosis and/or expansion in the extra-cellular fluid volume with edema.

Inhalation: Remove to fresh air. Seek medical attention if discomfort persists.

5. FIRE-FIGHTING MEASURES

Product is non-combustible. Thermal decomposition products are carbon dioxide and sodium carbonate (soda ash). Carbon dioxide is an asphyxiant, and soda ash is an irritant.

Protective equipment: Self-contained breathing apparatus is necessary if large quantities are involved.

Extinguishing media: Use extinguishing material that is appropriate for fire in the surrounding area.

Appendix E


Member Emergency Information Cards

During each FRC season, safety cards will be made for each member of the team which will include the following information:

- Name
- Grade
- Role
- Picture
- Allergies/Health Problems/Medications
- Phone No.
- Emergency Contact Info
- Safety Certifications

These cards will be kept with the team mentor and will be used in case of emergency when information from the card is needed.

Card examples:

| | |
|---|---|
| CIRCUIT BIZURKERS 7494 | |
| Name: |  |
| Grade: | |
| Role: | |
| Allergies: None | |
| Phone Number: | |
| Emergency Contact Name And Relation: | |
| Emergency Contact Number: | |
| 7494 | |

| | |
|--|--|
| CIRCUIT BIZURKERS 7494 | |
| ADDITIONAL INFORMATION | |
| Health Problems: | |
| Medications Taken: | |
| Additional Notes: | |
| Safety Certifications: UL Safety Certified | |