Safety in Molten Salt Bath Operations

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I. Introduction

Kolene® molten salt processes generally offer many economic advantages compared to other processes. However, as with any chemical process, there are physical and health hazards that need to be addressed. These revolve around three primary areas: the elevated temperatures involved; the chemistry of the salts; and the fumes that may be developed by chemical reactions between the bath, the work and the atmosphere interface. Most heat-treating and cleaning salts are operated in the 400°F - 1000°F range and at these temperatures possess very low viscosity's and low surface tensions combined with high specific heat.

All liquids operating at elevated temperatures present thermal burn hazards and certain molten salts present additional chemical hazards due to chemical composition. Acids and alkalis can cause severe burns to any area of the body that they contact. In general, alkali burns are more serious because alkali compounds penetrate deeper and burn longer. Additionally, molten salts, with their high specific heat, low viscosity, and surface tension, can create special operational and equipment issues. Because of these properties, molten salts tend to easily spatter when disturbed or when water or other fluids having boiling points lower than the salts are introduced. The excellent wetting characteristics of molten salts require specially designed and maintained equipment, which is not common to other processes. Chemical reactions which can involve the work piece, or oxygen and moisture present at the surface/atmosphere interface may release gaseous fumes which must be vented from the work place and, by properly designed pollution abatement equipment, prevented from reaching the environment.

With properly designed equipment and correct operational procedures, processing in molten salt can be as safe as any industrial process and safer than many. This Safety Manual does not replace the regular Safety/Maintenance Manual, but is intended only as a supplement to emphasize many safety related issues.

The statements and methods presented about the products mentioned are based upon the best available data and practices known to Kolene at the present time. If not properly used, the products mentioned can present physical and health hazards. Kolene recommends that, before anyone uses or handles the products mentioned, he/she should read and understand the Equipment Safety/Maintenance Manual and the Material Safety Data Sheet.

II. Chemical Hazards

Precautions

Most Kolene® products are alkaline **CORROSIVES** and can cause severe thermal burns at operating temperatures and chemical burns at lower temperatures. They may also contain **OXIDIZERS**, which will support combustion.

Use only under the prescribed conditions in specially designed equipment.

Do NOT allow in eyes, on skin, or clothing.
Do NOT take internally.
Do NOT breathe dust or mists.

Do wear recommended protective clothing.
Do wash thoroughly after handling.

Refer to the Kolene® product specific Material Safety Data Sheet (MSDS) for physical and health hazard details. With simple registration, various MSDS pdfs are available for free download at www.kolene.com.

Product Labels

The label on each Kolene® product will include:

1. Product name, which corresponds to the name on the MSDS.
2. Company name, address and emergency telephone number.
3. The specific hazards pertinent to that product.
4. Precautions and first aid procedures.
5. The label may contain the standard "Hazardous Materials Information Guide" label as shown below, with appropriate values indicated for each.

NOTE: Each hazard category will have a number indicating the degree of significance. Refer to the actual product label for specific hazard ratings.

4 Extreme
3 Serious
2 Moderate
1 Slight
0 Minimal

The Personal Protective Equipment recommended would be indicated by a letter, which will generally be "D" (face shield with goggles, gloves and apron).

III. Equipment

While some of the molten salt bath equipment safety features presented in this section have been in existence for some time, others reflect more modern refinements. All of the features represent sound design principles for safety and pertain to all salt bath equipment, regardless of age or origin.

A. Typical Equipment

Figure (1) illustrates a typical salt bath used for descaling, cleaning or organic stripping. The outer walls of the rectangular units are completely welded and are salt-tight to contain any leak from the inner vessel.

These units contain many features intended to minimize or eliminate most of the hazards mentioned earlier. The completely hooded unit's feature totally enclosed construction and usually have counter weighted, manually or pneumatically operated access doors at either end, specially constructed double-pane safety glass viewing windows and heat-resistant lamps. Blowers are installed to exhaust all fumes, spatter and steam from the unit, and fully insulated salt bath furnaces prevent thermal skin burns from exterior surfaces.

In general, salt bath furnaces are constructed of plain carbon steel, but may be constructed of stainless steel, Inconel, or other materials for specific processing requirements. Proper initial construction with double wall design and selection of materials assure long, safe, salt furnace performance. All units should be provided with exhaust ductwork and air washers or scrubbers.

Figure (1)
Typical Kolene® Unit

III. Equipment (continued)

B. Methods of Heating and Control

Safety considerations are critical in designing methods of heating and controlling salt bath temperatures. Gas fired immersion burner tubes or Kolectric® resistance heaters are most often used to heat a salt bath. In gas-fired systems, gas entering the tube is premixed with air in a venturi, presenting an ideal mixture for spark ignition. A flame detection rod is placed in the heart of the flame, so that if a flameout should occur, a signal is sent to the controller, which closes the inlet gas solenoid valve. **MANY CONTROL CABINETS HAVE HIGH VOLTAGE INPUTS AND OUTPUTS AND CONTROL PANEL DOOR INTERLOCKS, WHICH SHOULD NOT BE BY-PASSED.** Whenever performing maintenance procedures on the equipment, motors, or controls, appropriate "lockout" procedures and devices must be used. On units that are heated with Kolectric® resistance heaters, there is high voltage danger at the heater connections and the protective cover and signs should not be removed when the power is on.

DO NOT BY-PASS OR "JUMPER OUT" SAFETY COMPONENTS DESIGNED INTO THE EQUIPMENT SUCH AS FLAME SENSING UNITS, AIR FLOW SWITCHES, GAS OR AIR PRESSURE SWITCHES, WATER FLOW SWITCHES, COVER, DOOR OR FIXTURE INTERLOCKS. When specific operational problems occur, contact Kolene's Service Department.

C. Safety Equipment

An emergency eye wash station and safety shower should be installed close to the operator station, in an uncluttered area for quick and easy access.

Only non-skid grip type grating should be used on all walkways and catwalks.

Work fixtures and maintenance tools should be constructed only of solid stock. **DO NOT INTRODUCE HOLLOW TUBING IN MOLTEN SALT BATHS**, except in equipment specially designed for processing tubular shapes.

IV. Salt Storage, Handling, PPE

Most Kolene® salts are corrosive and hygroscopic (readily absorb moisture from the air). Therefore, drums should be tightly closed when not in use and a minimum delay should occur when drums are opened for an addition to the salt bath.

A. Personal Protective Equipment and Apparel

The equipment operator, maintenance personnel and others should wear long sleeves, gloves and eye protection whenever they are in the area of the molten salt bath.

FULL FACE SHIELD AND GOGGLES SHOULD BE WORN WHEN OPENING DRUMMED PRODUCTS AND WHENEVER OPERATORS ARE EXPOSED TO THE SALT BATH.

Respiration equipment is normally not required; however, whenever exposure to dust is possible or when ventilation equipment failure or malfunction occurs, adequate respiration equipment must be provided.

Manufacturer recommended rubber or neoprene gloves for corrosive duty should be worn when handling open drummed products. The equipment operator should wear cotton gloves or heat resistant type gloves (NOTE: Many impregnated gloves conduct heat readily and should be avoided). Some maintenance operations, such as desludging, may require a heat resistant suit or apron.

Neoprene or rubber boots may be required when cleaning up spills. Avoid the use of leather shoes because they readily absorb, and are attacked by, alkaline compounds.

Protective apparel of this kind should be used whenever there is danger of being splashed by molten salt, for example, during pump-outs or scraping the pot walls. Based upon our testing of a number of candidate fabrics for resistance to direct molten salt splashes, the following materials are suggested for use in protective apparel. There may be other suitable materials, but it cannot be assumed all "thermally protective" or "aluminized clothing" are satisfactory.

Fabric: "Life Tex Dual Mirror"
DM 1098
DM 1091
DM 1095
(Manufactured by Gentex in Carbondale, PA)

IV. Salt Storage, Handling, PPE (continued)

A. Personal Protective Equipment and Apparel (continued)

A manufacturer who makes protective apparel from such materials is:

Steel Grip, Inc.	Phone:	(217) 442-6240
700 Garfield	Toll-Free:	(800) 223-1595
PO Box 747	Fax:	(800) 270-0517
Danville, IL 61832	Email:	steelgrip@steelgripinc.com
	Website:	www.steelgripinc.com

Protective clothing and equipment do not provide complete protection from chemical burns. Engineering controls, safe operating practices and common sense should all be employed to minimize exposure to molten salt.

SAFETY SHOWERS AND EYE WASH STATIONS SHOULD BE AVAILABLE AT THE UNIT.

B. Chemical Storage

Drums should ideally be stored indoors in a dry area. While the drums are water tight, extended outdoor exposure to the elements will eventually result in container and label deterioration. Avoid direct contact and storage with concentrated acids, reducing agents, magnesium, tin, zinc, aluminum (and alloys of these metals), and flammable or combustible materials.

Salt spills should be promptly swept up and floors should be washed with water to remove remaining residues. Salt allowed to stay on the floor or other surfaces will draw moisture from the air and become very slippery. If salt drums are to be reused for any other purpose, such as trash collection, etc., they should be thoroughly washed out with water to remove any residual salts. **NEVER REUSE THESE DRUMS TO STORE FOOD FOR HUMAN OR ANIMAL CONSUMPTION, EVEN IF WASHED.**

V. Operational Procedures

A. General

Refer to your specific safety/maintenance manual and product Material Safety Data Sheet (MSDS) for operational details. Special caution should be exercised in processing materials and compounds other than those for which this equipment was designed. Do not exceed rated processing load capacities. Great care should be exercised in handling water around a molten salt bath. The introduction of water, or the insertion of wet parts, wet sludge pans and work tools, or wet make-up salt, can be explosive in nature due to the sudden generation of steam, causing violent eruptions of molten salt. (The exceptions are when Alko and Koliquid® products are used where direct introduction of water is carried out in very specialized equipment for chemical reasons.)

Care should also be exercised in returning processed parts and fixtures to the salt bath once they have been immersed in the salt and removed. When parts or fixtures have cooled and have not been properly rinsed and dried, any retained salt may have attracted atmospheric moisture that will cause the molten salt to splatter or erupt when the moist parts enter the salt bath. This is also true for sludge pans, work cradles, burner tubes, electrodes, agitators, thermocouples or anything else removed from the molten salt and subsequently returned to it. All such items should be thoroughly washed and completely dried before returning them to the salt bath. In some cases preheating may be necessary to ensure complete dryness.

B. Salt Charging Melt Down Procedure

Whether initially charging or recharging a previously used piece of equipment, it is necessary to ensure that the work zone, heating zone and sludge settling zones are completely free of all foreign matter, sludge, parts, residual salts and moisture, etc. After the gas burners or Kolectric® heaters have been satisfactorily checked out, the Kolene® salt pot can be charged with salt. Granular, flake, or bead materials should be used for the initial melt down and a sufficient number of drums should be placed conveniently near the unit so that once begun, the charging operation can go forward without interruption. The amount of salt to be added should be carefully calculated based on its specific molten density to bring the level to within 4" to 6" from the top of the furnace. A continuous supply of fresh salt must be provided in the burner tube zone while firing to ensure that the burner tubes are completely covered in salt at all times. This may require the removal of select burner tubes and manual pushing or hoeing of salt into areas where it will not flow by gravity. As salt around the burner tubes melts, more salt must be added to ensure complete coverage of the tubes and elimination of hot spots.

V. Operational Procedures (continued)

B. Salt Charge Melt Down Procedure (continued)

DO NOT ADD MORE SALT THAN THE TOTAL CALCULATED CHARGE, AS OVERFLOWS MAY RESULT. WEAR FULL PROTECTION EQUIPMENT DURING CHARGING OPERATIONS.

Refer to the maintenance manual for details concerning proper combustion and/or proper Kolectric® FLA settings for the specific unit operation.

C. Procedures for Adding Make-up Salt

Great care should be exercised in handling drums containing flake, bead, or granular Kolene® salts. The loaded drums may contain up to 500 lbs. of product and adequately sized handling equipment should be selected. There are many drum carriers available, which have rotating mechanisms for controlled flow, which can be utilized with lifting hoists, forklift trucks and other devices. Use precaution with any device so as to prevent a sudden shift in the drum's center of gravity, which would allow salt to spill at uncontrolled rates causing splashing, waves, or overfilling.

Kolene® salt is available in a variety of packaging, i.e.: 500, 1000, 2000 lb. supersacks; 50 lb. bags; 200, 500 lb. drums (fiber, non-returnable, and DOT). Selection of the proper packaging is important for a safe and effective way to maintain the proper recommended freeboard.

Kolene® Koliquid® salt is added to the molten salt bath only with very specialized equipment and controls.

D. Specific Operations

Never immerse hollow tubing or closed cavity dies or parts having blind holes in molten salt, unless they are vented and thoroughly dry inside. This same precaution of dryness applies to all parts. Do not exceed rated capacities of hoists and work handling equipment. General cleanliness around the Kolene® unit is essential. Sweep up spilled salt immediately before it absorbs moisture and becomes slippery. Floors should be flushed with water to remove remaining residues.

UNIT ACCESS, MAINTENANCE DOORS AND VIEWING WINDOWS SHOULD BE KEPT CLOSED AT ALL TIMES DURING UNIT OPERATION, CHARGING OR DESLUDGING. OPEN ONLY TO INTRODUCE WORK LOADS AND/OR TO PERFORM SPECIFIC APPROVED MAINTENANCE OPERATIONS. Do not enter an enclosed unit containing molten salt, unless specifically authorized. NEVER STRADDLE A MOLTEN SALT BATH OR SUBJECT YOURSELF TO THE RISK OF A SLIP OR FALL WHERE ANY PART OF THE BODY COULD CONTACT THE MOLTEN SALT.

V. Operational Procedures (continued)

D. Specific Operations (continued)

Depending on system design and purpose, some materials may not be compatible with the molten salt in use. Do not process magnesium, tin, zinc or their alloys in molten salts. Avoid the uncontrolled or excessive introduction of organic materials. Care should be exercised in processing aluminum and its alloys at high temperatures. Titanium processed at high temperatures in oxidizing salts must be insulated from contact with steel to prevent a galvanic reaction fire. Whenever in doubt consult your supervisor or Kolene's Service Department.

If your equipment is designed for Electrolytic® use (KASTECH® Electrolytic®), process voltage is low (3-6 volts DC) and this voltage does not present a personnel danger. However, amperages will be very high on some units (up to 5000 amps) and if accidental shorting occurs between the negative and positive buss bars or connections, the resulting arc may cause injury from burns. Do not turn on process current when a known short exists or with a non-insulated work hoist hook engaged in the fixture or workbasket.

On descaling units utilizing a steam wipe system, proper precaution should be observed to prevent burns. Although low-pressure steam is used, its volume is considerably increased by superheating and is released at high velocity through the nozzle slots.

Do not add any salt or material to the system other than that for which it was designed. NEVER ADD ACIDS, REDUCING AGENTS AND/OR CYANIDE TO OXIDIZING SALT BATHS. Refer to the MSDS for product information.

E. Desludging of the Salt Bath

Sludge and other by-products are regularly collected in a pan located in the bottom of the work zone of the furnace. Desludging is a maintenance function that must be performed at regular intervals. GOGGLES, FACE SHIELD AND PROTECTIVE APPAREL SHOULD BE WORN WHEN DESLUDGING OPERATIONS ARE BEING CONDUCTED.

Used Kolene® salt drums or other 55 gallon drums may be used as containers for Kolene® salt sludge. However, the inside of the drums must be completely clean and free of residual salt, moisture or other compounds. If molten sludge or salt is added to contaminated containers, fire, smoke, spatter, or even an explosion could result. Also, the receiving drum must not have split seams or side bungs from which molten sludge could readily leak.

V. Operational Procedures (continued)

F. Long Term Idling or Permanent System Shut Down

During periods of low production it may be desirable to reduce temperatures to conserve energy. Units may be set down in temperature to form a hard insulating crust over the salt bath, which will consume less energy and facilitate a fairly rapid return to operational temperatures. NEVER ATTEMPT TO BREAK THROUGH A CRUST WITH HAND HELD BARS OR OTHER DEVICES. A complete shutdown requires excess energy for re-melting the entire salt mass when restarting. If an indefinite or permanent period of shut down is anticipated, it is recommended that the salt be pumped out of the unit before any such shut down. Consultation with the Kolene Service Department would be beneficial prior to any final decision in this regard.

G. Pump-out Guidelines

Pump-out operations present unique hazards if not done properly. A Kolene Service Representative should be present during any pump-out operation. Observe good safety practices prior to and during pump-outs. ALL PERSONNEL INVOLVED IN THE PUMP-OUT OPERATION SHOULD WEAR PROTECTIVE CLOTHING, SAFETY GLASSES, HARD HAT, AND FACE SHIELDS.

Specially designed air operated salt pumps are available from Kolene Corporation. Pump and piping preparation is critical to a safe operation. All drums must be bung free and of sound construction, clean, free of moisture and other contaminants. Do not set drums on damp, oil soaked or combustible wooden pallets or floor surfaces. Have fire extinguishers and absorbents ready and near the area in case of fire or drum leakage. When the pump-out is complete, suitable warning signs and barricades should be provided around the drums until they solidify and cool to room temperature. Drums should not be moved, unless absolutely necessary, until they are completely solidified.

If drums must be moved before solidification for logistic reasons, a preferred method would be to have the drums located inside a steel tote or container that would retain any splashed material.

V. Operational Procedures (continued)

G. Pump-out Guidelines (continued)

Alternatively, drums should be securely strapped together on a nonflammable skid and raised only far enough to clear floor obstacles, and then very carefully moved so as to prevent spillage. Before final clean out of the furnace it must be allowed to completely cool. If the furnace residues are to be cleaned out with water, it should be added slowly and carefully after the unit has cooled down. After filling the furnace with water, the burners can be fired to about 180°F and the agitation (if available) turned on. The contaminated water may be pumped out and treated as necessary and the procedure repeated until all residues are eliminated. If a jackhammer is employed, personal protective equipment including respirators must be used and care must be taken to be sure no damage occurs to the furnace.

H. Molten Salt Sampling Procedure

WEAR THE PROPER PROTECTIVE CLOTHING (LONG SLEEVES, GLOVES, FACE SHIELD, HEAD COVER), OPEN THE ACCESS DOOR OR WINDOW OVER THE SALT BATH AND PROCEED AS FOLLOWS: Using a smooth, clean, cool dry steel bar*, immerse one end into the salt withdrawing it quickly and allowing the sample to solidify on the bar. The salt will flake off as it cools. Put the flakes into a clean, dry sample can. At least 10.0 grams (one third ounce) are required for analysis. Seal the sample can with tape (electrical tape works well) to exclude moisture. Send the sample to Kolene Corporation for analysis.

*3/4" to 1" (19 mm to 25 mm) in diameter
18" - 24" (457 mm - 610 mm) long
DO NOT USE PIPE OR TUBING.

I. Molten Sludge Sampling Procedure

WEAR PROPER PROTECTIVE CLOTHING (LONG SLEEVES, GLOVES, FACE SHIELD, HEAD COVER) AND PROCEED AS FOLLOWS: Using a smooth, clean, dry steel spatula or long handled spoon, carefully dig into the center of the sludge pan approximately halfway down into the sludge. Take the sludge sample from this area. Put the sludge into a clean, dry sample can. At least 15 grams (1/2 oz.) are required for initial analysis. Seal the sample can with tape (electrical tape works well) to exclude moisture. Send the sample, along with your completed sludge profile sheet, to Kolene Corporation for analysis.

V. Operational Procedures (continued)

J. Guidelines for Shipping Kolene® Salt Samples

Most Kolene® salt and sludge samples are hazardous materials, and as such, are subject to certain regulations and restrictions during transportation.

1. All hazardous materials must be properly identified, packaged, and labeled in accordance with DOT Regulations (CFR 49), U.S. Postal Regulations and some special carrier requirements, e.g. UPS or Express Air, etc.

2. In general, hazardous materials shipments are banned from all "passenger" carrying vehicles and cannot be carried on board commercial passenger airlines.

3. We recommend the following as a prudent practice in transporting small samples of salt or sludge, under DOT Limited Quantities Exemption (49 CFR 100-177).
   a) Identify the specific hazards associated with the sample. The Kolene® product MSDS contains the DOT hazard classification and identification numbers. If some doubt exists, contact Kolene Corporation for clarification.
   b) Package dry samples in the Kolene supplied steel tins, remove any exterior residue, and seal the container with electrical tape to exclude moisture pick-up.
   c) On the lid of the sample tin, identify your company, type of salt or sludge, and the temperature at which it was obtained, as well as the date.
   d) The sample tins should be over packed in cushioned fiberboard cartons or padded envelopes and again, securely sealed. Identify the hazards on the exterior of the over pack carton or bag as required.

      Examples: Kolene® Kastech® Basic: UN1823, sodium hydroxide mixture, solid
      Kolene® No. 6: UN3085, oxidizing substance, solid, corrosive, n.o.s.

4. Regular UPS offers an easy method of transportation with minimal labeling and certification forms requirements. If packages are to be sent using a carrier other than UPS, packaging requirements should be verified with that carrier prior to shipment.

5. For additional information or questions, contact Kolene Corporation.

V. Operational Procedures (continued)

K. Acid Tank Safety

General: Some Kolene® processing operations use acids and acid tanks. The purpose of the acid in the Kolene® process is to neutralize any salt remaining on the work surface and to brighten the surface of the work. During normal operation this equipment will contain a dilute mineral or organic acid that can present both thermal and chemical burn hazards. (CONSULT THE APPROPRIATE ACID MSDS BEFORE OPERATING OR WORKING AROUND THIS EQUIPMENT).

Physical Data: Most mineral and organic acids are stable under ordinary conditions of use and storage. However, the specific acid in use may be a reducing or oxidizing agent, both of which can be very reactive with various metals, organic compounds, bases or other reactive substances. IN ALL CASES, CONSULT THE PRODUCT MSDS FOR MORE SPECIFIC INFORMATION.

Precautions: The acid in use is CORROSIVE and may be an OXIDIZER. Avoid contact with eyes, skin or clothing and wear appropriate protective clothing, gloves and eye protection. Use adequate ventilation and avoid breathing mists or acid fumes. Many acids react exothermally with water and bases. WHEN MIXING AN ACID CHARGE, ALWAYS ADD THE ACID TO THE WATER, NEVER ADD WATER TO CONCENTRATED ACID.

Kolene® salts, hot or cold, are very reactive with acids and uncontrolled mixing of acids and alkalis can generate considerable exothermic heat.

VI. Emergency and First Aid Procedures

IMPORTANT: The first aid carried out at the scene of an accident often decides the ultimate fate of the patient. **ACT QUICKLY AND KEEP CALM!** Refer to the MSDS for specific product information.

A. Eye or Skin Contact

Most products contain caustic alkalis. If either hot or cold salt contacts the skin, immediately flush with large amounts of water (for at least 15 minutes with eyelids open in case of eye exposure). Seek medical attention for all burns.

Remove and clean any contaminated clothing prior to re-use.

B. Inhalation

Remove person to fresh air; provide artificial respiration and oxygen if necessary. Seek medical attention.

C. Ingestion

If the person is conscious, do not induce vomiting. Give large quantities of water. Never give anything by mouth to an unconscious person. Immediately seek medical attention.

VII. Fire Fighting Procedures

DO NOT USE WATER IN THE VICINITY OF THE SALT BATH.

A. Hazards of Using Water

Water should not be allowed to enter the salt bath because of the explosive nature of this combination. Water will instantly vaporize and can cause the molten salt to erupt in all directions. The larger the volume of water, the more violent the reaction becomes.

B. Extinguishing Methods

Use only dry chemical or carbon dioxide extinguishers in the vicinity of the molten salt bath. EXCEPTION: WITH Kolene® KQW™ AND Kolene® No. 10 USE ONLY CO_2 IN THE VICINITY OF THE SALT BATH.

C. Fire Department Notification

Your local fire department must be informed of the existence and location of your molten salt bath. It is advisable to post signs at building entrances stating that there is a molten salt bath in the building and that there is a danger of explosion if water is used to extinguish fires.

D. Sprinkler Systems

Overhead sprinkler systems should not be located above molten salt bath systems. When fire codes or local Fire Chiefs insist on overhead water sprinklers, canopies should be installed above the salt bath with adequate drainage to direct all water away from the molten salt.

E. Miscellaneous

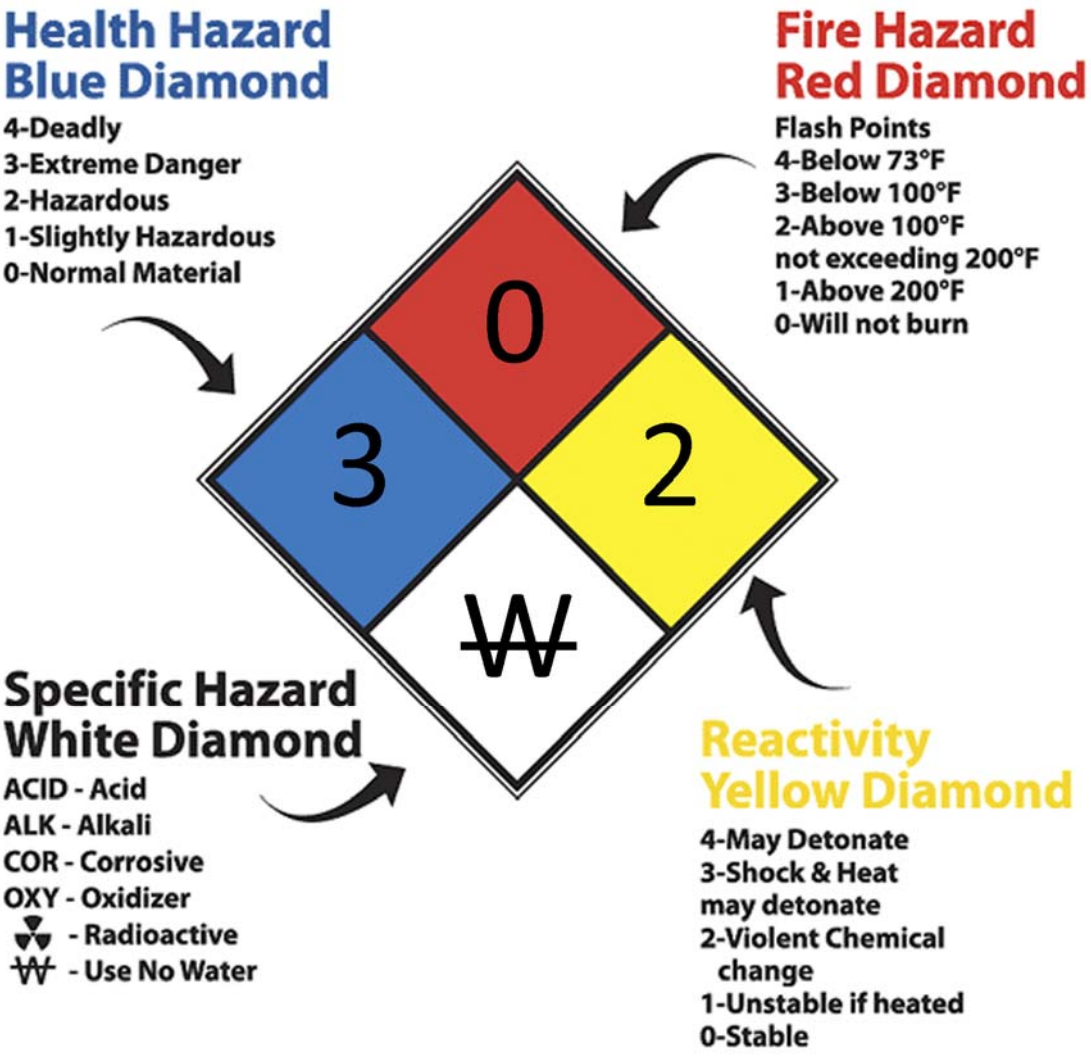
Kolene® products are basically nonflammable and non-explosive in normal use and storage; however some products do contain oxidizers which can support combustion under certain circumstances. Water, CO2 or dry chemical can be used to extinguish surrounding fires in storage areas. EXCEPTION: WITH Kolene® KQW™ AND Kolene® No. 10, DO NOT USE DRY CHEMICAL EXTINGUISHERS.

Under conditions of extreme heat (above 1000°F) these products may generate oxides of nitrogen and carbon, water vapor, hydrogen and in some cases chlorides, fluorides, and other compounds. Please refer to the product MSDS for details.

VII. Fire Fighting Procedures (continued)

F. Fire Department Codes

National Fire Protection Codes for fires around MOLTEN SALTS



DOT Emergency Response Guide No. 45 outlines procedures and emergency actions for fires involving storage of drummed products.