

SECTION 1 - PRODUCT IDENTIFICATION

PRODUCT NAME: FORMULA 291
 PRODUCT USE: BOILER DISPERSANT
 RESTRICTIONS ON USE: Refer to label, available technical information, and other appropriate sections of this SDS.
 UN NUMBER: 1760
 PROPER SHIPPING NAME: CORROSIVE LIQUID N.O.S. (CONTAINS SODIUM HYDROXIDE), 8, PGIII
 MANUFACTURER'S NAME: Garratt-Callahan Company
 ADDRESS: 50 Ingold Road, Burlingame, CA 94010-2206
 EMERGENCY PHONE: **North America: CHEMTREC: 1-800-424-9300**
Outside North America: +1-703-527-3887
 BUSINESS PHONE: Product Information: 650-697-5811
 MSDS NUMBER: SD1291
 DATE OF REVISION: 11/12/2013

SECTION 2 - HAZARDS IDENTIFICATION

SIGNAL WORD: WARNING

HAZARD STATEMENT:

H315: Causes skin irritation.
 H319: Causes serious eye irritation.
 H335: May cause respiratory irritation.



PRECAUTIONARY STATEMENTS: (PREVENTION)

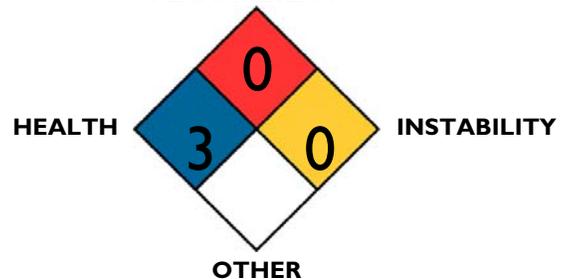
P101: If medical advice is needed, have product container or label at hand.
 P102: Keep out of reach of children.
 P103: Read label before use.
 P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
 P264: Wash all exposed skin/hair thoroughly after handling.
 P271: Use only outdoors or in a well-ventilated area.
 P280: Wear protective gloves/protective clothing/eye protection/face protection.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD (BLUE)	3
FLAMMABILITY HAZARD (RED)	0
REACTIVITY HAZARD (YELLOW)	0

Hazard Scale
 0=Minimal
 1=Slight
 2=Moderate
 3=Serious
 4=Severe
 *=Chronic hazard

**NFPA RATING
 FLAMMABILITY**



SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Ingredients</u>	<u>CAS#</u>	<u>EC#</u>	<u>ICSC#</u>	<u>WT %</u>
POLYMALEIC ACID	26099-09-2	NA	NA	6
SODIUM HYDROXIDE	1310-73-2	215-185-5	0360	4

SECTION 4 - FIRST AID MEASURES

Exposed individuals must be taken for medical attention if any adverse effect occurs. Take a copy of this MSDS to the health professional with the individual. P312: Call a POISON CENTER or doctor/physician if you feel unwell.

WARNING: Causes skin irritation and serious eye irritation. May cause respiratory tract irritation. Also refer to Section 11 for symptoms, effects, and likely routes of exposure for this product.

TARGET ORGANS:

ACUTE irritation of skin, eyes, respiratory and gastrointestinal systems.

CHRONIC irritation of skin, eyes, respiratory and gastrointestinal systems.

SKIN EXPOSURE: P302+P352: IF ON SKIN: Wash with soap and water. Minimum flushing time is for 15 minutes. P362+P364: Take off contaminated clothing and wash before reuse. P332+P313: If skin irritation occurs: Get medical advice/attention.

EYE EXPOSURE: P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing. Use sufficient force to open the eyelids. Have the exposed individual "roll" their eyes. Minimum flushing time is for 15 minutes. P337+P313: If eye irritation persists get medical advice/attention.

INHALATION: P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell.

INGESTION: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT ASSISTANCE INFORMATION. Exposed individual must seek immediate medical attention if any adverse effect occurs. Never induce vomiting or give diluents (milk or water) by mouth to someone who is unconscious, having convulsions, or unable to swallow.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Skin and respiratory disorders, as well as conditions involving the "Target Organs" may be aggravated by prolonged exposures to this product. Exposed individual must seek immediate medical attention if any adverse effect occurs.

NOTES TO PHYSICIAN: Treat symptoms as demonstrated by signs and distress in the patient.

SECTION 5 - FIRE FIGHTING MEASURES

SUITABLE (AND UNSUITABLE) EXTINGUISHING MATERIALS:

Product is non-flammable. Use fire extinguishing materials (water spray, carbon dioxide, foam, dry chemical) appropriate for surrounding fire.

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL:

Non-Flammable Liquid. Non-Explosive in presence of open flames and sparks, of shocks. Sodium Hydroxide reacts to form explosive products with ammonia and silver nitrate.

SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS:

Isolate materials not yet involved in the fire and protect personnel. Move containers from fire area if this can be done without risk; otherwise, cool with carefully applied water spray. Prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. Firefighters should wear fully protective clothing (chemical impermeable, fully encapsulated suit) and positive pressure self-contained breathing apparatus. Do not release run off from fire control methods to sewer or waterways.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, ENVIRONMENTAL PRECAUTIONS AND EMERGENCY PROCEDURES.

WARNING: Any container expansion or rounding indicates pressure build-up. Use extreme caution. When opening, release pressure slowly through opening.

SPILL AND LEAK RESPONSE: Uncontrolled releases should be responded to by appropriately trained personnel using pre-planned procedures. Proper protective equipment should be used, refer to Section 8 - exposure controls.

Small Spill: Mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. P391: Collect spillage.

Large Spill: Restrict access to the area. Provide adequate protective equipment and ventilation. Stop leak if without risk. Remove chemicals which can react with the spilled material. Add dry inert material to contain and absorb spilled material. Prevent entry into surface waters, sewers, basements or confined areas, dike if needed. Ensure that exposure to product is not at a concentration exceeding regulatory limits. Decontaminate the area thoroughly. Decontaminate all response equipment with soapy water before returning to service. Place all spill residue in a suitable container and seal. P391: Collect spillage.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING: Keep out of reach of children. All employees who handle this material should be trained to handle it safely. Open containers slowly on a stable surface. As with all chemicals, avoid getting this product ON YOU or IN YOU. Avoid direct or prolonged contact with skin or eyes. Do not ingest. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors, dusts or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately. Use only as directed. Refer to Section 8 for exposure controls.

CONDITIONS FOR SAFE STORAGE: Containers of this product must be properly labeled. Storage areas of this product should be clearly identified, well-illuminated, clear of obstruction and accessible only to trained and authorized personnel. Store containers in a clean, cool, well ventilated, dry location, away from direct sunlight, away from incompatible materials at temperatures between 50°F (10°C) - 100°F (37°C). Keep container tightly closed when not in use. P405: Store locked up. Do not ingest. Do not breathe vapor mist. Wash hands after handling. Refer to Section 10 for incompatibilities.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION AND ENGINEERING CONTROLS: Use with adequate ventilation. Eyewash/safety shower station is recommended to be available near where this product is used/stored.

EXPOSURE LIMITS/GUIDELINES:

EXPOSURE LIMITS IN AIR

CHEMICAL NAME	CAS#	ACGIH TLV		OSHA PEL	OTHER
		TWA	STEL	TWA	
POLYMALEIC ACID	26099-09-2	NE	NE	NE	N/A
SODIUM HYDROXIDE	1310-73-2	NE	C-2 mg/m3	2 mg/m3	NIOSH REL C-2 mg/m3

NE = Not Established

INGESTION: Do not eat, drink, smoke, or apply cosmetics when handling this product. Wash all exposed skin/hair thoroughly after handling.

RESPIRATORY PROTECTION: P261: Avoid breathing dust/fume/gas/mist/vapours/spray. P271: Use only outdoors or in a well-ventilated area. Maintain airborne contaminant concentrations below guidelines listed above, if applicable. Air-purifying respirators with dust/mist/fume/spray filters are recommended if operations may produce dusts, mists or sprays from this product with concentrations at or above levels posted above.

EYE PROTECTION: P264: Wash all exposed skin/hair thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection. Wear chemical safety goggles or safety glasses with side shields. A face shield may also be necessary for splash protection.

SKIN PROTECTION: P260: Do not breathe dust/fume/gas/mist/vapours/spray. Wash all exposed skin/hair thoroughly after handling. P280: Wear protective gloves/protective clothing/eye protection/face protection. Use chemically-resistant gloves and skin protection, when handling this product. Use body protection appropriate for task (e.g., lab coat, overalls).

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE and COLOR:	Clear amber liquid	VAPOR PRESSURE, mm Hg @ 20°C :	NA
ODOR :	Aromatic	VAPOR DENSITY (Air=1):	NA
ODOR THRESHOLD:	Not established	RELATIVE DENSITY@20°C (water=1):	1.0 - 1.1
pH:	12.0 - 14.0	SOLUBILITY IN WATER:	Complete
MELTING/FREEZING POINT:	NA	PARTITION COEFFICIENT(n-octanol/water)	Not established
BOILING POINT:	208 °F	AUTOIGNITION TEMPERATURE:	NA
FLASHPOINT:	Non-flammable	DECOMPOSITION TEMPERATURE:	Not established
EVAPORATION RATE (n-BuAc=1):	< 1	VISCOSITY:	Not established
FLAMMABILITY (SOLID/GAS):	Not applicable	VOLATILE ORGANIC COMPOUNDS (%):	Not established
FLAMMABLE LIMITS (in air by volume, %):	NA		

SECTION 10 - STABILITY AND REACTIVITY

REACTIVITY: Product is not reactive under standard ambient temperature and pressure.

STABILITY: Stable under normal condition of use and storage.

POSSIBILITY OF

HAZARDOUS REACTIONS: None known.

CONDITIONS TO AVOID: See incompatible materials.

INCOMPATIBLE MATERIALS: Strong acids, oxidizing agents.

HAZARDOUS

DECOMPOSITION PRODUCTS: None known.

SECTION 11 - TOXICOLOGICAL INFORMATION

TOXICOLOGICAL EFFECTS: Oral: LD50, Rat, 200 mg/kg, Dermal: LD50, Rabbit, 1350 mg/kg.

LIKELY ROUTES OF EXPOSURE: Skin/eye contact and inhalation.

RELATED SYMPTOMS: Skin, eye, respiratory and gastrointestinal irritation. May be harmful if swallowed.

DELAYED/IMMEDIATE/CHRONIC EFFECTS FROM SHORT AND LONG TERM EXPOSURES:

ACUTE: Contact with skin and eyes may cause burning and irritation. Do not wear contact lenses when using this product. Ingestion may cause gastric distress.

CHRONIC: Repeated or prolonged exposure to this product can produce target organ damage. Repeated exposure of the eyes can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation can produce varying degrees of respiratory irritation.

NUMERICAL MEASURES OF TOXICITY:

Fish: 96hr, LC50, Flathead minnow, 10000 mg/l.

Algae: No data available.

Daphnia: 48hr, LC50, 7520 mg/l.

CARCINOGENICITY: None of the components of this product are listed by the NTP, IARC, or regulated by OSHA as carcinogens.

SECTION 12 - ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

ECOTOXICITY: Data not available for this product.

PERSISTANCE AND DEGRADABILITY: This material is inorganic and not subject to biodegradation. Small quantities of such bases as Sodium Hydroxide will slightly raise the pH of water in aquatic ecosystems, but larger quantities can raise the pH for extended periods of time.

BIOLOGICAL ACCUMULATION POTENTIAL: Material not expected to bioaccumulate.

MOBILITY IN SOIL: No data available for this product.

OTHER ADVERSE EFFECTS (i.e., hazardous to the ozone layer): No data available for this product.

BIOLOGICAL EXPOSURE INDICES: Currently, Biological Exposure Indices (BEIs) have not been determined for the components of this product.

SECTION 13 - DISPOSAL CONSIDERATIONS

DISPOSAL: P501: Dispose of contents/container in accordance with local/regional/national/international regulations. Rinse empty containers with water and use the rinse water to prepare the working solution. Refer to section 8 for exposure controls - personal protection.

SECTION 14 - TRANSPORTATION INFORMATION

PROPER SHIPPING NAME

DOT: UN1760, CORROSIVE LIQUID N.O.S. (CONTAINS SODIUM HYDROXIDE), 8, PG III
Emergency Response Guidebook, Guide No.: 154
Passenger Aircraft Qty: 0.5L
Cargo Aircraft Qty: 2.5L

IMDG/IMO: UN1760, CORROSIVE LIQUID N.O.S. (CONTAINS SODIUM HYDROXIDE), 8, PG III

IATA/ICAO: UN1760, CORROSIVE LIQUID N.O.S. (CONTAINS SODIUM HYDROXIDE), 8, PG III

ENVIRONMENTAL HAZARDS

(i.e., **MARINE POLLUTANT**): None known.

TRANSPORT IN BULK (according to annex II marpol 73/78 and the IBC code): Not applicable.

SPECIAL PRECAUTIONS FOR USER: None known.

PRODUCT REQUIRES CORROSIVE LABEL



SECTION 15 - REGULATORY INFORMATION

United States and International Regulations

United States Regulations: U.S. SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting as listed below, requirements of Sections 302, 304, and 313 of Title of the Superfund Amendments and Reauthorization Act:

CHEMICAL NAME

POLYMALEIC ACID	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - NO SARA 313 (40 CFR 372.65) - NO
SODIUM HYDROXIDE	SARA 302 (40 CFR 355, Appendix A) - NO SARA 304 (40 CFR Table 302.4) - YES SARA 313 (40 CFR 372.65) - NO

U.S. Regulations

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lbs (4,540 kg) therefore applies, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Sodium Hydroxide (CAS# 1310-73-2): 1000 lbs (454 kg).

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

SARA Title 311/312, Hazard Category: Acute Health: YES; Chronic: NO; Fire: NO; Reactive: NO; Sudden Release of Pressure: NO

California Safe Drinking Water and Toxic Enforcement Act (proposition 65): No component of this product is on the Proposition 65 list.

International Regulations

CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are on the DSL or NDSL Inventories

CANADIAN WHMIS CLASSIFICATION: A component of this product (Sodium Hydroxide, CAS# 1310-73-2) has a WHMIS classification of E (corrosive).

SECTION 16 - OTHER INFORMATION

PREPARED BY: GARRATT CALLAHAN

DATE OF REVISION: 11/12/2013 Supercedes: 12/13/2011

Formula 291 is registered with the NSF to the NSF International Registration Guidelines for Proprietary Substances and Nonfood Compounds for category codes G5, G6; with NSF Reg. No. 045965.

FORMULA 291 has been certified by the Orthodox Union as Kosher Pareve under the UK ID number of OUV3-2CDB6A5 when prepared in either the Addison, Illinois or Burlingame, California facilities.

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained herein, and assume no responsibility regarding the suitability of this information for the user's intended purpose or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purpose.