MATERIAL SAFETY DATA SHEET

BELZONA® 1591 (CERAMIC XHT) SOLIDIFIER

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME	BELZONA® 1591 (CERAMIC XHT) SOLIDIFIER
INTERNAL ID	101/1445/02
SYNONYMS, TRADE NAMES	New formulation
PRODUCT USE	Solidifier component of a two component system. Mix with Base component before use. System for high temperature equipment handling water, aqueous solutions and hydrocarbons. Application by brush. Please refer to the relevant Belzona® Instructions For Use for further information. For use only by professional operators.

SUPPLIER	Belzona Inc. 2000 N.W. 88 Court Miami FL 33172 ☎ 1-305-594-4994 Fax: 1-305-599-1140 belzona@belzona.com	**MANUFACTURER**	Belzona Polymerics Limited Claro Road, Harrogate North Yorkshire HG1 4AY, England ☎ +44 (0) 1423 567641 Fax: +44 (0) 1423 505967 belzona@belzona.co.uk
CONTACT PERSON	Prepared by the Regulatory Affairs Department; Phone: +44 (0) 1423 567 641		
EMERGENCY TELEPHONE	CHEMTREC: 800-424-9300 Toll free in United States CHEMTREC: 1-703-527-3887 For calls from outside the United States		

2 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Clear liquid Amine odor. DANGER. Combustible liquid and vapor. Causes skin and eye burns. May be harmful if absorbed through the skin. May cause allergic skin or respiratory reaction. Prevent the product from entering into soil, drains, sewers, ditches or waterways.

POTENTIAL HEALTH EFFECTS

INHALATION

Exposure to vapors may result in irritation of the mucous membrane and the respiratory system; in severe cases burns may occur.

INGESTION

Ingestion is not normally an exposure risk arising from professional applications. Inadvertent ingestion of small amounts of this product through poor hygiene or cross contamination may cause irritation or burns of the mouth, throat and stomach.

SKIN CONTACT

Contact with skin or any living tissue may cause burns, in severe cases complete tissue destruction may occur. This product contains components that may be absorbed through the skin (see Section 8). May be harmful if absorbed through skin.

EYE CONTACT

Contact with eyes may cause severe irritation with corneal injury, which may result in permanent impairment of vision. Product vapor in low concentrations can cause tearing, conjunctivitis and corneal edema when absorbed into the tissue of the eye from the atmosphere. Low vapor concentrations of many amines can cause a visual disturbance known as 'blue haze' or 'halo vision'. Vision becomes foggy or blurred, objects may appear bluish, and halos may be seen around lights. Symptoms may be delayed. Eye discomfort or pain may not be experienced by affected persons. The effect normally clears up within a day and causes no permanent injury. The visual disturbance could contribute to accidents.

ROUTE OF ENTRY

Inhalation. Skin absorption. Ingestion. Skin and/or eye contact.

TARGET ORGANS

Eyes. Skin. Respiratory system, lungs.

MEDICAL SYMPTOMS

Contact with skin or any living tissue may cause burns, in severe cases complete tissue destruction may occur. Repeated contact with the skin may cause dermatitis or allergic skin reaction. Onset of symptoms may be delayed. Extreme irritation of eyes and mucous membranes, including burning and tearing. Inhalation may result in asthmatic symptoms, wheezing and a tightness of the chest. Onset of symptoms may be delayed.

MEDICAL CONSIDERATIONS

Skin contact constitutes a pronounced hazard. Persons with a history of skin sensitization problems should only be employed in processes in which this product is used under appropriate medical supervision. Persons with a history of asthma, allergies or chronic or recurrent respiratory disease should not risk exposure to respiratory sensitizers.

CARCINOGENICITY

Not available for the mixture, however none of the components in concentrations of 0.1% or greater are listed as carcinogens according to OSHA, NTP, ACGIH or IARC.

BELZONA® 1591 (CERAMIC XHT) SOLIDIFIER

SENSITIZATION

There is no data on the product itself. This product contains one or more component that has been reported to cause respiratory and/or skin sensitization in sensitive individuals. See Section 11.

TOXIC TO REPRODUCTION

Not available for the mixture, however available information on the individual components does not indicate a reprotoxic hazard.

MUTAGENICITY

Not available for the mixture, however available information on the individual components does not indicate a mutagenic hazard.

DEVELOPMENTAL TOXICITY

Not available for the mixture, however available information on the individual components does not indicate a developmental hazard.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Weight
1,2-CYCLOHEXANEDIAMINE	211-776-7	694-83-7	60-100%
DIETHYLENETRIAMINE	203-865-4	111-40-0	10-30%

COMPOSITION COMMENTS

The remaining constituents of this product are either considered to be non-hazardous or below the relevant concentration limits.

4 FIRST-AID MEASURES

GENERAL INFORMATION

In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

INHALATION

Remove to fresh air. Keep the patient warm and at rest. If breathing has stopped, administer artificial respiration. Give nothing by mouth. If unconscious, place in the recovery position and seek medical advice.

INGESTION

If accidentally swallowed do NOT induce vomiting. Keep at rest. Rinse mouth with water and drink 1 cup of water every 10 minutes for 30 minutes. Seek immediate medical attention.

SKIN CONTACT

Remove contaminated clothing and shoes. Wash skin thoroughly with soap and water or use a proprietary skin cleaner. Do NOT use solvents or thinners. If irritation or inflammation persists, seek medical attention.

EYE CONTACT

Contact lenses should be removed. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart, and seek medical advice.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

Use: sand, alcohol resistant foam, carbon dioxide, chemical powder, water fog for larger fires.
Do NOT use water jet.

SPECIAL FIRE FIGHTING PROCEDURES

Fire will produce dense black smoke containing hazardous products of combustion (see Section 10). Exposure to decomposition products may be a hazard to health. Appropriate positive-pressure self-contained breathing apparatus (SCBA) and full fire fighting turn-out gear (Bunker gear) should be worn. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains, sewers, ditches or waterways.

UNUSUAL FIRE & EXPLOSION HAZARDS

SENSITIVITY TO MECHANICAL IMPACT
The product is not sensitive to mechanical impact or physical shock.
SENSITIVITY TO STATIC DISCHARGE
Probably not sensitive to static discharge.

AUTO IGNITION TEMPERATURE (°C)	NIA
FLAMMABILITY LIMIT - LOWER(%)	NIA
FLAMMABILITY LIMIT - UPPER(%)	NIA
FLASH POINT (°C)	>74 (162°F) CC (Closed cup).

FLAMMABILITY CLASS

3.1 Combustible Liquid IIIA

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Exclude sources of ignition and ventilate the area. Exclude non-essential personnel. Keep up-wind of spill to avoid breathing vapors. Do not get in eyes, on skin, or on clothing. Refer to protective measures listed in Section 8.

ENVIRONMENTAL PRECAUTIONS

Prevent the product from entering into soil, drains, sewers, ditches or waterways in large quantities.

SPILL CLEAN UP METHODS

Contain and collect spillages with non-combustible absorbent materials e.g. sand, earth, vermiculite, diatomaceous earth and place into a suitable labeled container. Clean surfaces down with a water and detergent mixture. Refer to disposal methods listed in Section 13.

7 HANDLING AND STORAGE

HANDLING

GENERAL

Keep the container tightly closed when not in use. Vapors may collect in the container headspace during transit or prolonged storage. Avoid breathing vapor when opening the container. Where possible open containers and mix components in a well ventilated place away from the application area. Prevent air-borne concentrations higher than the occupational exposure limits (see Section 8). Exclude non-essential personnel. Minimise the number of employees exposed and the duration of their exposure. Do not get in eyes, on skin, or on clothing. Smoking, eating and drinking should be prohibited in areas of storage and use. For personal protection see Section 8. Always keep in containers made of the same material as the supply container. Ensure emergency equipment (for fires, spills, leaks, etc.) is readily available. Good housekeeping methods and regular safe removal of waste materials should be observed.

FIRE/EXPLOSION

This product is combustible. Exclude sources of heat, sparks and open flame.

STORAGE

Observe the label precautions. Store between 5°C (41°F) and 30°C (86°F) unless otherwise stated in a dry, well ventilated place away from sources of heat, ignition and direct sunlight. No smoking. Prevent unauthorized access. Store separately from oxidizing agents and strongly acidic materials.

ENVIRONMENTAL STORAGE PRECAUTIONS

Spillage, incorrect storage of chemicals or waste materials or unsuitable disposal activities can result in pollutants seeping through the soil, causing serious harm to groundwater- which is a vital source of drinking water. All wastes especially liquid wastes, should be securely stored on site in designated areas that are isolated from waterways and groundwater and diked to contain any spillages.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

COMPONENT	STD	TWA (8-hrs)	STEL (15 min)	TWA (8-hrs)	STEL (15 min)
1,2-CYCLOHEXANEDIAMINE	SUP			5 mg/m3	
DIETHYLENETRIAMINE	OSHA (F)	1 ppm			
DIETHYLENETRIAMINE	ACGIH	1 ppm(Sk)		4.3 mg/m3(Sk)	

INGREDIENT COMMENTS

Consult local authorities for acceptable exposure limits. 'OSHA (F)' = 'Final Rule' Permissible Exposure Limit (PEL) set by OSHA. 'ACGIH' = Threshold Limit Value (TLV) set by ACGIH. Those occupational exposure limits that are marked 'SUP' are assigned by the supplier of the substance. 'Sk' indicates a risk of exposure through skin absorption.

ENGINEERING MEASURES

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. If these are not sufficient to maintain concentrations of particulates and/or vapors below the relevant occupational exposure limits, suitable respirators should be worn (see 'Respiratory Equipment' below).

RESPIRATORY EQUIPMENT

GENERAL GUIDANCE ON RESPIRATORY PROTECTION

It is essential that the concentration of the contaminant(s) in the application environment does not exceed the applicable occupational exposure limit(s) multiplied by the Assigned Protection Factor (APF) quoted for the respiratory protective equipment selected.

STANDARD APPLICATIONS

Where necessary, it is recommended that an OSHA/NIOSH approved supplied-air respirator (SAR) equipped with a full facepiece is worn if exposure to the applicator or other people nearby cannot be controlled to below the occupational exposure limit and engineering methods cannot reasonably be improved.

EMERGENCY REPAIRS OR APPLICATION OF SINGLE UNITS

Where necessary, it is recommended that an OSHA/NIOSH approved air-purifying full facepiece or half-face respirator equipped with appropriate vapor cartridge(s) should be worn. Where the application environment is likely to be contaminated by significant concentrations of dust then the appropriate particulate prefilter (N-, R- or, P-series) should be worn in combination with the above. It is essential that the facepiece is correctly fitted and the filter is changed in accordance with the manufacturer's instructions.

EMERGENCY SITUATIONS

Where entry into unknown or Immediately Dangerous To Life or Health (IDLH) atmospheres is required, an OSHA/NIOSH approved pressure-demand self-contained breathing apparatus (SCBA) with a full facepiece or a pressure-demand supplied-air respirator (SAR) with a full facepiece in combination with an auxiliary pressure-demand SCBA respirator should be worn.

BELZONA® 1591 (CERAMIC XHT) SOLIDIFIER

HAND PROTECTION

GENERAL GUIDANCE ON HAND PROTECTION

The breakthrough time of the gloves selected should exceed the expected use period. Where this is not possible gloves should be changed in good time, and in any case before the breakthrough time is exceeded. Where doubt exists, advice should be sought from manufacturers or vendors of protective gloves in order to determine appropriate types for the particular circumstances. Barrier creams may help to protect exposed areas of skin but are not substitutes for full physical protection. They should not be applied once exposure has occurred.

SPECIFIC RECOMMENDATIONS

Use protective gloves made of: Neoprene. Nitrile.

STANDARD APPLICATIONS / EMERGENCY SITUATIONS

Medium-heavy weight gauntlet type gloves that provide wrist protection are suitable.

EMERGENCY REPAIRS OR APPLICATION OF SINGLE UNITS

Light weight disposable gloves are normally suitable.

EYE PROTECTION

STANDARD APPLICATIONS

It is recommended that eye protection, for example safety glasses with side shields or goggles are worn at all times during the handling and use of this material.

EMERGENCY SITUATIONS

Refer to 'Respiratory Equipment' above.

OTHER PROTECTION

STANDARD APPLICATIONS

Synthetic polyethylene coveralls such as the Tyvek PRO-TECH® or equivalent coveralls manufactured to provide protection against liquid chemicals should be worn. Grossly contaminated clothing should be removed and the skin washed with soap and water or a proprietary skin cleaner.

EMERGENCY REPAIRS OR APPLICATION OF SINGLE UNITS

Cotton overalls are normally suitable.

EMERGENCY SITUATIONS

Wear chemical resistant splash suit and boots made from neoprene or PVC, as appropriate.

HYGIENE MEASURES

Wash at the end of each work shift and before eating, smoking and using the toilet. Ensure eye wash facilities (fountain, bottle, vials, etc.) are readily available. Do not put contaminated articles or equipment e.g. spatulas, applicators, brushes, cloths etc., into pockets. Where necessary, contaminated work clothing and shoes should be removed to prevent cross contamination of surfaces and the risk of inadvertent skin contact and ingestion.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Liquid		
COLOR	Amber		
ODOR	Amine.		
PHYSICAL DATA COMMENTS	This section contains typical values for Health, Safety and Environmental guidance only and is not intended to represent a technical specification for the product. A = Alkaline.		
SOLUBILITY	Miscible with water.		
BOILING POINT (°C)	>187 (368°F) @ 760 mm Hg	**MELTING POINT (°C)**	NIA
RELATIVE DENSITY	0.93 - 0.95 @ 20°C (68°F)	**VAPOUR DENSITY (air=1)**	> 1
VAPOUR PRESSURE	< 0.1 kPa @ 20°C (68°F)	**EVAPORATION RATE**	N.ap
pH-VALUE, CONC. SOLUTION	A	**VISCOSITY**	NIA
DECOMPOSITION TEMPERATURE (°C)	NIA	**ODOR THRESHOLD, LOWER**	NIA
FLASH POINT (°C)	>74 (162°F) CC (Closed cup).	**PARTITION COEFFICIENT (N-Octanol/Water)**	NIA
VOLATILE ORGANIC CONTENT	0 g/litre		

10 STABILITY AND REACTIVITY

STABILITY

Stable under recommended storage and handling conditions (see Section 7). In a fire, hazardous decomposition products such as smoke, carbon monoxide, carbon dioxide, oxides of nitrogen and ammonia may be produced.

CONDITIONS TO AVOID

Keep away from oxidizing agents and strongly acidic materials to prevent the possibility of exothermic reaction.

11 TOXICOLOGICAL INFORMATION

TOXICOLOGICAL INFORMATION

There is no data on the product itself.

Name	DIETHYLENETRIAMINE
Toxic Dose 1 - LD 50	1080 mg/kg (oral rat)

BELZONA® 1591 (CERAMIC XHT) SOLIDIFIER

Toxic Dose 2 - LD 50	1090 mg/kg (dermal rbt)
Toxic Conc. - LC 50	NIA.

Toxicological information

Has caused skin sensitization in humans. Occupational respiratory sensitization has been documented. May be absorbed through the skin.

Name	1,2-CYCLOHEXANEDIAMINE
Toxic Dose 1 - LD 50	4556 mg/kg (oral rat)
Toxic Dose 2 - LD 50	NIA.
Toxic Conc. - LC 50	(See remarks.)

Toxicological information

Remarks: *The Acute Lethal Concentration (ALC) for 98% 1,2-cyclohexanediamine was determined to be 3.2 mg/l/rat (combined aerosol and vapor concentrations). However no deaths occurred in rats exposed to 89 or 93% 1,2-cyclohexanediamine at concentrations greater than 3mg/l. Has caused skin sensitization in animals.

12 ECOLOGICAL INFORMATION

ECOTOXICITY

There is no data on the product itself. The following information is provided on the basis of the individual component data available. The product should not be allowed to enter soil, drains, sewers, ditches and waterways or be deposited where it can affect ground or surface waters. See also Sections 5, 6, 7, 9 and 13.

BIOACCUMULATION

Not expected to bioaccumulate according to OECD/EC guidelines.

DEGRADABILITY

No data available.

ACUTE FISH TOXICITY

Based on the individual component data, the products LC50/EC50/IC50 are expected to be greater than 100 mg/l in most sensitive species.

13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS

GENERAL

Do NOT dump into any sewers, on the ground, or into any body of water. The product as shipped in its intended condition exhibits the following 'Characteristics' of hazardous waste as defined in 40 CFR 261.20-24: 'Corrosivity'- RCRA Code: D002. Disposal must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations are the responsibility solely of the waste generator.

COMPONENT DISPOSAL

TRANSIT PACKAGING: shrink or stretch wrap, boxes and fittings that have not been contaminated with product should be re-used or recycled. UNREACTED PRODUCT: empty uncleaned containers and contaminated packaging should be disposed of as hazardous chemical waste. REACTED PRODUCT: that has been mixed and cured in accordance with the relevant 'Instructions For Use' will form an inert filled polymeric compound that may be able to be disposed of as non-hazardous solid waste. Refer to your local licensed, permitted waste agent or facility.

14 TRANSPORT INFORMATION

TRANSPORT NOTES	Transport classification: labeling and packaging requirements may vary with pack and load size. Please refer to the current transport regulations. Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of accident or spillage.
DOT PROPER SHIPPING NAME	Diethylenetriamine mixture
TDG SHIPPING NAME	

Diethylenetriamine mixture

DOT HAZARD CLASS	8	**DOT PACKING GROUP**	II
UN NO. SEA	2079	**IMDG CLASS**	8
IMDG PACK GR.	II	**MARINE POLLUTANT**	No.
UN NO. AIR	2079	**AIR CLASS**	8
AIR PACK GR.	II	**TDG CLASS**	8
TDG PACKING GROUP	II		

15 REGULATORY INFORMATION

SARA (311/312) HAZARD CATEGORIES

Fire Acute

BELZONA® 1591 (CERAMIC XHT) SOLIDIFIER

REGULATORY STATUS (US)

This product is considered "Hazardous" as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200.

SECTION 313: This product does not contain toxic chemical subject to the reporting requirements of Section 313 of Title III of the Superfund Amendment and Reauthorization Act of 1986 and 40 CFR Part 372.

U.S California Safe Drinking Water & Toxic Enforcement Act (Proposition 65): WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Toxic Substance Control Act (TSCA): All constituents of this product are included on the Inventory or are not required to be listed.

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM -WHMIS

LABEL(S) FOR SUPPLY

Combustible Liquid.

Materials Causing Other Toxic Effects.

Corrosive Material.

CONTROLLED PRODUCT CLASSIFICATION

WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (CPR SECTION 33).
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

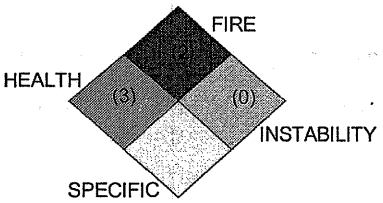
Canadian WHMIS Classification
B3 D2A D2B E

REGULATORY STATUS (CANADA)

Domestic Substances List (DSL) & Non-Domestic Substances List (NDSL): All constituents of this product are present on the DSL or are not required to be listed.

16 OTHER INFORMATION

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)



GENERAL INFORMATION

Throughout this Material Safety Data Sheet; NIA = No Information Available; N.ap = Not applicable.

REVISION COMMENTS

REVISION. This material safety data sheet has been revised in the following Section(s): All Sections. Replaces all previous versions.

Please observe the REVISION DATE. Should you be reading a material safety data sheet that is more than 24 months old or have concerns over its validity, please contact your local Belzona Distributor or Belzona direct (belzona@belzona.com) and the most current information will be sent to you.

REVISION DATE 08/12-2006

VERSION No. 1.0

SAFETY DATA SHEET STATUS

English (North American). Approved.

DISCLAIMER

To the best of our knowledge, the information contained herein is accurate. However, some of the information presented and conclusions drawn are derived from sources other than direct test data on the product itself and while Belzona Inc. believes such sources to be reliable, the information is provided without any warranty regarding its correctness.
Since Belzona Inc. has no control over the conditions under which the product will be used, liability will not be assumed to exceed replacement or refund of the purchase price of this product. Except as stated herein, there are no express or implied warranties including implied warranties of merchantability or fitness for a particular purpose. Belzona Inc. assumes no liability for injury or incidental or consequential damage arising out of the storage, handling, use or, disposal of this product.