MATERIAL SAFETY DATA SHEET
In compliance with OSHA 29 CFR 1910.1200
N.ap means Not Applicable NIA means No Information Available

PREPARED BY : DR.W.R.ASHCROFT DATE PREPARED : 29 MAR 1999

BELZONA INC., 2000 N.W. 88 COURT, MIAMI, FL 33172	EMERGENCY PHONE NUMBERS (Spill, Leak, Fire, Exposure or Accident) 800 424 9300 - Toll free in United States 202 483 7616 - For calls from outside the United States INFORMATION PHONE NUMBER 305 594 4994 - Working hours only

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NUMBER : 1004/1320
PRODUCT NAME : Belzona® 1221 (Super E-Metal) Base
PRODUCT CLASS : Modified epoxide resin

SECTION II - HAZARDOUS INGREDIENTS/TOXICOLOGICAL DATA

Hazardous Components	% by Weight	CAS Number	Exposure Limits OSHA PEL mg/m^3	ACGIH TLV ppm	ACGIH TLV mg/m^3	Toxicity LD_{50} Oral mg/Kg	LD_{50} Dermal mg/Kg	LC_{50} Inhal ppm
N,N'-dialkylamino-diphenylmethane	15-40	5285-60-9	NIA	NIA	NIA	1400	3200	NIA
Tetrapropoxylated-ethylenediamine	1-5	102-60-3	NIA	NIA	NIA	3900	NIA	NIA
Modified Silica	1-5	67762-90-7	6	N.ap	10	5000	NIA	NIA

CARCINOGENICITY
No data is available for the mixture, however, none of the ingredients are listed as carcinogens by OSHA, NTP, ACGIH or IARC.

SECTION III - PHYSICAL DATA

APPEARANCE AND ODOR : Dark gray paste with ammoniacal odor.
BOILING POINT : >200°C
SPECIFIC GRAVITY : 2.29
VAPOR PRESSURE : <1mm Hg @ 25°C
VAPOR DENSITY : Heavier than air
EVAPORATION RATE : N.ap
% VOLATILE BY VOLUME : N.ap
SOLUBILITY IN WATER : Negligible (<0.1%)

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT : >100°C
TEST METHOD : Pensky-Martens
EXPLOSION LIMITS LOWER : NIA
UPPER : NIA

OSHA FLAMMABILITY CLASS : N.ap
FLAMMABILITY INDEX (NFPA) : 1 Slight
REACTIVITY INDEX (NFPA) : 1 Slight
HEALTH HAZARD (NFPA) : 2 Moderate
EXTINGUISHING MEDIA : Water fog (not a direct stream of water), foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES
Wear protective clothing and use self-contained breathing apparatus. Full bunker gear should be worn in extreme cases. Use sand to contain burning material.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Decomposition and combustion products may be hazardous.

SECTION V - HEALTH HAZARDS

ROUTE(S) OF ENTRY : Skin contact, skin absorption, eye contact.
PRIME HAZARD(S) : Skin irritation. Harmful if swallowed.

EFFECTS OF EXPOSURE
Acute : Skin, eye and respiratory tract irritant.
Chronic : Chemical burns and dermatitis.

EMERGENCY AND FIRST AID PROCEDURES
Inhalation : If symptoms are experienced, remove source of contamination and/or move victim to fresh air. If recovery is delayed or there are signs of distress obtain medical attention immediately.

Eye contact : Flush eyes with water for 15 minutes. Seek medical advice if any irritation persists.

Skin contact : Immediately remove excess with a clean cloth and wash skin thoroughly with soap and water. If irritation or inflammation persists, seek medical advice.

Ingestion : If swallowed, do not induce vomiting. Rinse mouth with water and drink plenty of water. Call TAMPA BAY Regional Poison Center (Tel.No.1-800-282-3171) and/or seek medical advice.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Skin and eye conditions.

SECTION VI - REACTIVITY DATA

STABILITY : Stable
STABILITY CONDITIONS TO AVOID : N.ap

INCOMPATIBILITY (MATERIALS TO AVOID CONTACT WITH)
Strong oxidizing agents and acids.

HAZARDOUS DECOMPOSITION PRODUCTS
Gaseous combinations of carbon, hydrogen, nitrogen and oxygen may occur at elevated temperatures.

HAZARDOUS POLYMERIZATION
Hazardous polymerization will not occur when stored and used as directed.

POLYMERIZATION CONDITIONS TO AVOID
N.ap

SECTION VII – SPILL AND LEAK PROCEDURES

SPILLAGE
Absorb with an inert material (e.g. earth or sand). Sweep up, place into suitable labelled containers, seal and dispose of properly. Flush area with detergent and water.

WASTE DISPOSAL METHODS
Dispose of in accordance with Local, State and Federal Regulations.

SECTION VIII – SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE MEASURES

RESPIRATORY : In confined areas or where good natural/mechanical ventilation is not available an appropriate NIOSH or MSHA approved respirator should be worn.

SKIN : Impermeable gloves, such as Neoprene or Nitrile. Wash hands with soap and water and use hand cream. Wear suitable protective clothing to minimize skin contact. Remove contaminated clothing and wash before reuse.

EYE : Safety glasses or goggles. Eyewash station.

MECHANICAL PROTECTIVE MEASURES

VENTILATION : Where adequate natural ventilation is not available provide suitable local exhaust ventilation.

OTHER PROTECTIVE EQUIPMENT
: Where there is a risk of contamination of footwear, safety boots should be worn and cleaned thoroughly before reuse.

OTHER COMMENTS
: Where machining or abrading of cured material leads to the production of respirable and/or nuisance dust, an appropriate NIOSH or MSHA approved respirator should be worn.

SECTION IX - SAFE HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS

HANDLING

Avoid contact with skin and eyes.

STORAGE

Overheating may cause containers to rupture. Containers should be stored under cool, dry conditions. Check all containers for leaks at regular intervals and before use.

HYGIENE PRACTICES

When using, do not eat, drink or smoke. Remove contaminated clothing and launder before reuse. Wash hands with soap and water after handling this product.

SECTION X – REGULATORY INFORMATION

SARA TITLE III - NOTIFICATION OF TOXIC CHEMICALS

None of the constituents of this product are subject to reporting requirements under section 313 of the Superfund Amendment and Reauthorization Act of 1986 (40 CFR Part 372).

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. believe 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.

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SECTION I - PRODUCT IDENTIFICATION

PRODUCT NUMBER : 1105/1321
PRODUCT NAME : Belzona® 1221 (Super E-Metal) Solidifier
PRODUCT CLASS : Polyisocyanate

SECTION II - HAZARDOUS INGREDIENTS/TOXICOLOGICAL DATA

Hazardous Components	% by Weight	CAS Number	Exposure Limits OSHA PEL mg/m^3	ppm	ACGIH TLV mg/m^3	Toxicity LD_{50} Oral mg/Kg	Dermal mg/Kg	LC_{50} Inhal ppm
Titanium Dioxide	1-5	13463-67-7	15	N.ap	10	NIA	NIA	NIA
DGEBA-Epoxy Resin	1-5	25068-38-6	NIA	NIA	NIA	5000	2000	NIA
Hexamethylene-Diisocyanate (HDI)	1-5	822-06-0	NIA	0.005	0.034	NIA	NIA	NIA
Homopolymer of HDI	60-100	28182-81-2	NIA	NIA	NIA	NIA	NIA	NIA
Modified Silica	1-5	67762-90-7	6	N.ap	10	5000	NIA	NIA

CARCINOGENICITY
No data is available for the mixture, however, none of the ingredients are listed as carcinogens by OSHA, NTP, ACGIH or IARC.

SECTION III - PHYSICAL DATA

APPEARANCE AND ODOR : Off-white paste with ammoniacal odor.
BOILING POINT : >200°C
SPECIFIC GRAVITY : 1.21
VAPOR PRESSURE : 0.05mm Hg @ 25°C
VAPOR DENSITY : Heavier than air
EVAPORATION RATE : NIA
% VOLATILE BY VOLUME : 1-5
SOLUBILITY IN WATER : Reacts

SECTION IV – FIRE AND EXPLOSION HAZARD DATA

FLASH POINT : >100°C
TEST METHOD : Setaflash
EXPLOSION LIMITS LOWER : NIA
UPPER : NIA

OSHA FLAMMABILITY CLASS : N.ap
FLAMMABILITY INDEX (NFPA) : 1 Slight
REACTIVITY INDEX (NFPA) : 1 Slight
HEALTH HAZARD (NFPA) : 2 Moderate
EXTINGUISHING MEDIA : Water fog (not a direct stream of water), foam, carbon dioxide, dry chemical.

SPECIAL FIRE FIGHTING PROCEDURES

Wear protective clothing and use self-contained breathing apparatus to protect against inhalation of poisonous vapors and other decomposition/combustion products. Full bunker gear should be worn in extreme cases. Use sand to contain burning material.

UNUSUAL FIRE AND EXPLOSION HAZARDS

Decomposition and combustion products may be hazardous.

SECTION V - HEALTH HAZARDS

ROUTE(S) OF ENTRY : Skin contact, skin absorption, eye contact, inhalation.
PRIME HAZARD(S) : Respiratory and skin sensitizer.

EFFECTS OF EXPOSURE

Acute : Skin, eye and respiratory tract irritation. Harmful by inhalation.
Chronic : Chemical asthma, sensitization and dermatitis.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation : If symptoms are experienced, remove source of contamination and/or move victim to fresh air. If recovery is delayed or there are signs of distress obtain medical attention immediately.

Eye contact : Flush eyes with water for 15 minutes. Seek medical advice if any irritation persists.

Skin contact : Immediately remove excess with a clean cloth and wash skin thoroughly with soap and water. If irritation or inflammation persists, seek medical advice.

Ingestion : If swallowed, do not induce vomiting. Rinse mouth with water and drink plenty of water. Call TAMPA BAY Regional Poison Center (Tel.No.1-800-282-3171) and/or seek medical advice.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Skin, eye and respiratory conditions.

SECTION VI - REACTIVITY DATA

STABILITY : Stable
STABILITY CONDITIONS TO AVOID : N.ap

INCOMPATIBILITY (MATERIALS TO AVOID CONTACT WITH)
Water (Carbon dioxide evolved), strong oxidizers, alcohol or amines, under uncontrolled conditions.

HAZARDOUS DECOMPOSITION PRODUCTS
Gaseous combinations of carbon, hydrogen, nitrogen and oxygen may occur at elevated temperatures.

HAZARDOUS POLYMERIZATION
Hazardous polymerization will not occur when stored and used as directed.

POLYMERIZATION CONDITIONS TO AVOID
N.ap

SECTION VII - SPILL AND LEAK PROCEDURES

SPILLAGE
Absorb with a dry inert material (e.g. sand). Sweep up, place into suitable labelled containers, seal and dispose of properly. Flush area with dilute ammonium hydroxide or water-alcohol mixture.

WASTE DISPOSAL METHODS
Dispose of in accordance with Local, State and Federal Regulations.

SECTION VIII - SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTIVE MEASURES

RESPIRATORY : In confined areas or where good natural/mechanical ventilation is not available, leading to a risk of exceeding the TLV's indicated, an appropriate NIOSH or MSHA approved respirator should be worn.

SKIN : Impermeable gloves, such as Neoprene or Nitrile. Wash hands with soap and water and use hand cream. Suitable protective clothing to minimize skin contact. Remove contaminated clothing and wash before reuse.

EYE : Safety glasses or goggles. Eyewash station.

MECHANICAL PROTECTIVE MEASURES

VENTILATION : Where adequate natural ventilation is not available provide suitable local exhaust ventilation.

OTHER PROTECTIVE EQUIPMENT
: Where there is a risk of contamination of footwear, safety boots should be worn and cleaned thoroughly before reuse.

OTHER COMMENTS
: Where machining or abrading of cured material leads to the production of respirable and/or nuisance dust, an appropriate NIOSH or MSHA approved respirator should be worn.

SECTION IX - SAFE HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS

HANDLING

Avoid breathing vapors and contact with skin and eyes.

STORAGE

Overheating may cause containers to rupture. Unopened containers should be stored under cool, dry conditions. Check all containers for leaks at regular intervals and before use.

HYGIENE PRACTICES

When using, do not eat, drink or smoke. Remove contaminated clothing and launder before reuse. Wash hands with soap and water after handling this product.

SECTION X - REGULATORY INFORMATION

SARA TITLE III - NOTIFICATION OF TOXIC CHEMICALS

Hexamethylene-Diisocyanate, CAS No.822-06-0, a constituent of this product at 1.2% by weight, is subject to reporting requirements under section 313 of the Superfund Amendment and Reauthorization Act of 1986 (40 CFR Part 372).

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