



FLAME SEAL-TB™ COATING TECHNICAL DATA

DESCRIPTION: Aqueous Based Resin

ANALYSIS:

Total Solids by weight	61-66%
Weight per gallon	10.8 lbs. - 11.2 lbs.
Specific gravity	1.3 - 1.4
pH	2.5 - 3.5
Flash Point	None
Color	White
Coverage	65 Square Feet per Gallon
Volatility	Non-Volatile
Solvents	Water (Contains no petroleum derivatives)
Toxicity	Non-toxic
Fungus resistance	Good
Mold resistance	Good
Bacteria resistance	Mildly resistant
Linear shrinkage	None
Moisture absorption	None
Corrosive	Mildly, none when dry

Not harmful to plants or animals.

RECOMMENDED USE:

INTERIOR - FLAME SEAL-TB™ Fire Protective Coating A thermal barrier intumescent coating, designed for use over Polyurethane Foam Insulation. Application may be accomplished by either brush, roller, or spray methods. Blend well in original container before use, as some solids may settle on the bottom of the container. Mix with T50-TB curing agent at a mix ratio of 4:1 (4 parts *FLAME SEAL-TB™* resin to 1 part T50-TB by volume. Ex: 4 gallons *FLAME SEAL-TB™* + 1 gallon T50-TB) Mix thoroughly with low-medium speed mixer for 5 minutes. The coverage rate should be 65 square feet per gallon. (See Intertek UL-1715 Test Report) This product recommended for interior use only.

Compliant with FDA/USDA for incidental food contact.

This product complies with U.S. Federal Regulations concerning the use of lead in paint AND hydrocarbon emissions.



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MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE NO.: 800-424-9300

PRODUCT NAME *FLAME SEAL-TB™ FIRE PROTECTIVE COATING*
CHEMICAL FAMILY Aqueous based intumescent fire retardant.

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: FLAME SEAL PRODUCTS, INC.
4025 WILLOWBEND BLVD. #310
HOUSTON, TX 77025 USA

TELEPHONE # FOR INFORMATION: 713-668-4291

SECTION II - HAZARDOUS COMPONENTS

COMPONENT		ACGIH	OSHA
<u>CAS REGISTRY NO.</u>	<u>WT. %</u>	<u>TLV</u>	<u>PRL</u>
Phosphoric Acid	< 0.1%	500 ppm TWA	400 ppm TWA
7664-38-2		500 ppm STEL	500 ppm STEL

SECTION III - PHYSICAL PROPERTIES

APPEARANCE AND ODOR: White, odorless liquid.

MOLECULAR WEIGHT: Not Applicable.

BOILING POINT: (DEGREES FAHRENHEIT): 212 - Not accurate: mixture of components.

MELTING POINT: (DEGREES FAHRENHEIT): Not Applicable.

VAPOR PRESSURE: (mm of Mercury): Not Determined.

SPECIFIC GRAVITY (WATER=1): 1.3 – 1.4

VAPOR DENSITY (AIR=1): Not determined.

PERCENT VOLATILE: (BY WEIGHT): 39.0 % max. (water content only)

pH: 2.5 – 3.5

SOLUBILITY IN WATER: Partial with heat. Has insoluble characteristic when cool.

EVAPORATION RATE: (BUTYL ACETATE=1): Not Determined.

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PRODUCT – FLAME SEAL –TB™

STORAGE: Temperature- 40-90°F, (4.44°C-32.22°C)
Time – 6 months

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (DEGREES FAHRENHEIT: PENSKY-MARTENS CLOSED CUP): None to boiling.

FIRE EXTINGUISHING MEDIA: Not combustible. Use water spray, fog, foam, dry chemicals, CO₂, or other agents as appropriate for material in surrounding fire.

FLAMMABLE LIMITS (PERCENT BY VOLUME): Not applicable.

SPECIAL FIRE FIGHTING PROCEDURES AND EQUIPMENT: Not combustible. Use safety equipment and clothing which is suitable for materials in surrounding fire.

UNUSUAL FIRE AND EXPLOSION HAZARDS: May liberate flammable hydrogen gas after long term storage of liquid in metal containers. Store liquid only in stainless steel, plastic or glass vessels.

HAZARDOUS COMBUSTION PRODUCTS: Combustion products can include carbon dioxide, carbon monoxide, oxides of phosphorus and traces of ammonia.

SECTION V - REACTIVITY DATA

STABILITY: STABLE X UNSTABLE

CONDITIONS TO AVOID: Storage of “liquid” in containers other than plastic, stain-less steel or glass. Contamination with strong oxidizers, strong alkali or strong acids.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers, alkalis, or acids. When in liquid state the product slowly reacts with some common metals causing flammable hydrogen gas to be emitted.

HAZARDOUS DECOMPOSITION PRODUCTS: Not applicable.

HAZARDOUS POLYMERIZATION: Will Occur Will Not Occur X

SECTION VI - HEALTH HAZARD INFORMATION

EXPOSURE FROM ROUTINE USE: No evidence of adverse effects from available information.

EFFECTS OF OVEREXPOSURE: EYES. . . Direct contact or prolonged exposure to mist may cause redness and pain. NOSE. . . Breathing of heavy concentrations of mists may cause sinus irritation and dizziness. MOUTH. . . Ingestion may cause nausea. SKIN. . . Prolonged contact may cause reddening of effected area.

PROBABLE ROUTES OF EXPOSURE: Skin, eyes, inhalation, and ingestion.

EMERGENCY AND FIRST AID PROCEDURES:¹

EYE CONTACT: Immediately flush eyes with water for at least 15 min. including underneath eyelids. Consult a physician if irritation persists.

INHALATION: Remove to fresh air immediately. Use adequate ventilation.

INGESTION: Substance exhibits very low toxicity. Consult a physician if upset stomach or nausea occur.

SECTION VII - TOXICITY DATA

ORAL: Acute Oral Toxicity: Ld50 (rat) > 5000 mg/kg

DERMAL: Not established, not expected to be harmful. May be irritating with continual contact.

INHALATION: Not established. Not expected to be harmful. If necessary, use respirator if adequate ventilation is not possible to keep exposure to particulate matter at a minimum in heavy mist areas when spraying.

OTHER PERTINENT DATA: Not applicable.

SECTION VIII - SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTION EQUIPMENT

PROTECTIVE GLOVES: Wear impervious gloves as necessary to avoid excessive skin contact: i.e. rubber or neoprene.

EYE PROTECTION: Protective glasses or goggles in heavy mist areas.

RESPIRATORY PROTECTION (SPECIFY TYPE): For heavy mist exposure use a NIOSH/MSHA approved respirator suitable for use with organic vapors if proper ventilation can not be provided.

OTHER PROTECTIVE EQUIPMENT: Adequate clothing to minimize direct contact with skin.

VENTILATION

LOCAL EXHAUST: Use exhaust fans if necessary to control mist or vapor.

MECHANICAL (GENERAL): Normal room ventilation of fans.

SPECIAL: Not applicable.

SECTION IX - SPILL, LEAK, AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Confine spilled material and absorb on sand, sawdust, earth or other available solids. Sweep and place in a suitable container. Flush with water and rinse minor spills into sewer if permitted by Federal, State and local regulations.

WASTE DISPOSAL METHODS: Mix excess FLAME SEAL®-TB resin with T50™ -TB Curing Agent, allow to solidify completely, then dispose in accordance with disposal methods of local regulations for non-hazardous solid waste.

CLEAN WATER ACT REQUIREMENTS: Section 311 of the Clean Water Act lists phosphorus as a hazardous substance which, if discharged into or upon water, will present an imminent and substantial danger to public health and welfare. Spills of 5000 pounds or more must be reported to the National Response Center @ 1-800-424-8802.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) REQUIREMENTS: No applicable information found.

SECTION X - REGULATORY INFORMATION

FDA: No applicable information found.

USDA: No applicable information found.

CPSC: No applicable information found.

TSCA: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

DOT: No applicable information found.

PROPER SHIPPING NAME: Not applicable.

HAZARDOUS CLASS: Not applicable.

LABEL REQUIRED: Not applicable.

IDENTIFICATION NUMBER: Not applicable.

OTHER PERTINENT INFORMATION: Not applicable.

SECTION XI - SPECIAL PRECAUTIONS AND COMMENTS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Keep away from eyes. Avoid prolonged contact with skin. Wash exposed skin with soap and water. Avoid breathing of mist.

OTHER PRECAUTIONS: Not applicable.

EFFECTIVE DATE: July 11, 2008

SUPERCEDES: May 7, 2008



MATERIAL SAFETY DATA SHEET

EMERGENCY TELEPHONE NO.: 800-424-9300

PRODUCT NAME: **T50TM -TB (Catalyst/Crosslinker)**
CHEMICAL FAMILY: Mixture of Melamine-Formaldehyde Resin Solutions.

SECTION I - PRODUCT INFORMATION

MANUFACTURER'S NAME: FLAME SEAL PRODUCTS, INC.
4025 WILLOWBEND BLVD. #310
HOUSTON, TX 77025 USA

TELEPHONE # FOR INFORMATION: 713-668-4291

SECTION II - HAZARDOUS COMPONENTS

<u>COMPONENT</u> <u>CAS REGISTRY NO.</u>	<u>WT. %</u>	<u>ACGIH</u> <u>TLV</u>	<u>OSHA</u> <u>PEL</u>
Melamine Formaldehyde Resin CAS #9003-08-1	33	10/5 total dust mg/m ³ / respir dust-mg/m ³	15/5 total dust mg/m ³ / respir dust-mg/m ³
Methylated melamine Formaldehyde polymer CAS#68002-20-0 Formaldehyde component (see below)	31	NE	NE
Isobutanol CAS #78-83-1	<= 2.3	50ml/m ³	100 ml/m ³ 8 hr.TWA
Free formaldehyde CAS#50-00-0	< 0.6	0.3 ml/m ³	0.75 ml/m ³ 8 hr.TWA 2 ml/m ³ 15min. STEL
Methanol CAS #67-56-1	<0.1	200 ppm TWA 250 ppm STEL	200 ppm TWA

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PRODUCT – T50™ -TB (Catalyst/Crosslinker)

SECTION III - PHYSICAL PROPERTIES

APPEARANCE AND ODOR: Clear to semi-clear with Alcohol odor.

MOLECULAR WEIGHT: Not Applicable.

BOILING POINT: (DEGREES FAHRENHEIT): 212 - Not accurate: mixture of components.

MELTING POINT: (DEGREES FAHRENHEIT): Not Applicable.

VAPOR PRESSURE: (mm of Mercury): Not Determined.

PERCENT RESIN SOLIDS: Approximately 65%.

SPECIFIC GRAVITY (WATER=1): 1.21

PH – 8.5

WEIGHT PER GALLON: 9.8 – 10.2 LBS.

SOLUBILITY IN WATER: Complete.

STORAGE: Temperature- 40-90°F, (4.44°C-32.22°C)
Time – 6 months

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT (DEGREES FAHRENHEIT: PENSKY-MARTENS CLOSED CUP): >150° F.

FIRE EXTINGUISHING MEDIA: Water spray, dry chemical, foam, carbon dioxide or any Class B extinguishing agent.

SPECIAL FIRE FIGHTING PROCEDURES AND EQUIPMENT: Firefighters and others who may be exposed to products of combustion (see “Hazardous Decomposition Products”, below) should wear full protective clothing including self-contained breathing apparatus. Thoroughly decontaminate equipment after use.

UNUSUAL FIRE AND EXPLOSION HAZARDS: There is a possibility of pressure build-up in closed containers when heated. Use water spray to cool containers.

SECTION V - REACTIVITY DATA

HAZARDOUS DECOMPOSITION PRODUCTS: Thermal decomposition products may include formaldehyde, methanol, nitrogenous products and carbon monoxide.

MATERIALS TO AVOID: None

CONDITIONS TO AVOID: Do not expose to heat or ignition sources.

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PRODUCT – T50™ -TB (Catalyst/Crosslinker)

HAZARDOUS POLYMERIZATION: Will Occur _____ Will Not Occur X

SECTION VI - HEALTH HAZARD INFORMATION

EFFECTS OF OVEREXPOSURE: Occupational exposure to this material has not been reported to cause significant adverse human health effects.

PROBABLE ROUTES OF EXPOSURE: Inhalation and skin contact are expected to be the primary routes of occupational exposure to T50™ -TB.

EMERGENCY AND FIRST AID PROCEDURES:

EYE OR SKIN CONTACT: Immediately flush with water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Destroy contaminated shoes.

INHALATION: Remove to fresh air immediately. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention. Remove material from eyes, skin and clothing.

INGESTION: Substance exhibits very low toxicity. If ingested, consult a physician.

SECTION VII - TOXICITY DATA

SINGLE-DOSE (ACUTE) ANIMAL STUDIES INDICATE:

ORAL: Practically Non-Toxic (Rat LD50 > 6,600 mg/kg)

DERMAL: Practically Non-Toxic (Rabbit LD50 > 5,000 mg/kg)

EYE IRRITATION: Slightly Irritating (Rabbit)

SKIN IRRITATION: Practically Non-irritating (Rabbit, 4 hr. exposure)

SKIN IRRITATION: Corrosive (Rabbit, 24 hr. exposure)

SECTION VIII - SPECIAL PROTECTION INFORMATION

PERSONAL PROTECTION EQUIPMENT

SKIN PROTECTION: Wear appropriate protective clothing and chemical resistant gloves to prevent skin contact. Wear chemical goggles, a face shield and chemical resistant clothing such as rubber apron when splashing is likely. Wash immediately if skin is contaminated. Remove contaminated clothing promptly and launder before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

ATTENTION! REPEATED OR PROLONGED CONTACT MAY CAUSE ALLERGIC SKIN REACTIONS IN SOME PEOPLE.

EYE PROTECTION: Where there is significant potential for eye contact, wear chemical goggles and have eye flushing equipment available.

RESPIRATORY PROTECTION: Avoid breathing vapor and/or mist. Use NIOSH/MSHA approved respirator when airborne exposure limits are exceeded. If used, full facepiece replaces need for face shield and chemical goggles.

OTHER PROTECTIVE EQUIPMENT: Adequate clothing to minimize direct contact with skin.
VENTILATION: Provide natural or mechanical ventilation to control exposure levels below airborne exposure limits. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Consult NFPA Standard 91 for design or exhaust system.

SECTION IX - SPILL, LEAK, AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Remove any sources of sparks, flame or hot surfaces. Insure adequate ventilation. Absorb spill with commercial absorbing material and place into containers for disposal as below. Flush area with water spray. Keep out of sewers, watersheds and water systems.

WASTE DISPOSAL METHODS: In liquid form, these resins are considered” hazardous waste” as the term is defined in the Resource Conservation Recovery Act (RCRA, 40 CFR 261, Identification and Listing of Hazardous Waste”, due to its characteristic of ignitability (alcohol content). As such, disposal of liquid via incineration is required by regulation. However, in may areas, reacting the T50™ -TB curing agent with FLAME SEAL-TB™ resins first, to produce an non-toxic, non-flammable solid followed by disposal as a non-hazardous solid waste may be acceptable. Disposal should be in accordance with all applicable, local, state, and federal laws and regulations. Consult your attorney or appropriate regulatory officials for information on your locality.

SECTION X - REGULATORY INFORMATION

TSCA: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

WHEN SHIPPING IN CONTAINERS OF 1200 GALLONS OR LESS :

DOT PROPER SHIPPING NAME: “T50™ -TB Resin Solution”

DOT HAZARD CLASS/I.D. NO./PACKAGING GROUP: This material is not regulated when shipped in containers of 1200 gallons or less. The contents of this product in spite of product name or appearance are not dangerous goods restricted for transport according to Domestic and International regulations.

DOT LABEL: None

IATA: Not Regulated

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PRODUCT – T50TM-TB (Catalyst/Crosslinker)

U.S. SURFACE FREIGHT CLASS: “Plastics, synthetic, N.O.I., liquid”

REPORTABLE QUANTITY (RQ) UNDER DOT (49) CFR & CERCLA REGULATIONS: Package of 10,000 pounds or more contains 100 lb. RQ Formaldehyde.

WHEN SHIPPING IN ONE CONTAINER OF 1200 GALLONS OR MORE :

DOT PROPER SHIPPING NAME: “T50TM-TB Resin Solution”

DOT HAZARD CLASS/I.D. NO./PACKAGING GROUP: Environmentally Hazardous Substances, Liquid, N.O.S. (contains formaldehyde) 9, UN3082, 111 (in bulk)

DOT LABEL: Class 9 Label required

IATA: Not regulated (unless in packages of 10,000 lbs. or more) .

U.S. SURFACE FREIGHT CLASS: “Plastics, synthetic, N.O.I., liquid”

REPORTABLE QUANTITY (RQ) UNDER DOT (49) CFR & CERCLA REGULATIONS: Package of 10,000 pounds or more contains 100 lb. RQ Formaldehyde.

HAZARD CATEGORIES SARA TITLE III (40 CFR PT .370): “Immediate, Delayed”

SECTION XI - SPECIAL PRECAUTIONS AND COMMENTS

HANDLING AND STORING: Keep away from heat or flames. Keep away from eyes. Avoid contact with skin. Avoid breathing of vapors or mist.

HEALTH EFFECTS SUMMARY: Although the raw materials from Monsanto which are mixed together to make T50TM-TB are reported to be “Practically Non-Toxic” and “Practically Non-Irritating” in nature, they do contain very small quantities of Formaldehyde (<1.2 %), Isobutyl Alcohol (<0.4%) and Methanol (<0.1%). In pure form these three chemicals present substantial risks to health and safety, but the low concentration levels in T50TM-TB reduce this to proven levels of safety if handled with appropriate precautions. For the information of the user, details regarding dangers of these individual materials are included for reference in case of severe over-exposure to the product and in case of emergency or fire.

Following are excerpts of information provided by *INEOS MELAMINES* regarding some of these components:

FORMALDEHYDE

In addition to the irritation effect to the eyes, nasal passages, respiratory tract and skin, formaldehyde solutions can produce allergic skin reactions. Numerous publications in the scientific literature confirm the

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PRODUCT – T50™ -TB (Catalyst/Crosslinker)

irritating properties of acute and short-term exposure to formaldehyde in humans and animals and discuss toxic effects which are probably related to the irritants properties of this chemical.

Formaldehyde is listed as a substance that “may reasonably be anticipated to be carcinogenic” by the National Toxicology Program (NTP) in their Fifth Annual Report on Carcinogens, is classified as “probably carcinogenic to humans” by the International Agency for Research in Cancer (IARC Monographs, Vol. 29) and is regulated by OSHA as a carcinogen (29 CFR 1910.1048). The NTP and IARC listings were based, in part, on their determination that there is limited evidence for the carcinogenicity of formaldehyde in humans. However, the largest study (with a study population greater than the total of all other studies - more than 25,000 workers) found little evidence that mortality from cancer is associated with formaldehyde exposure at levels experienced by workers in the study. The NTP and IARC also considered that there is sufficient evidence for the carcinogenicity of formaldehyde in experimental animals on the basis of studies in which nasal tumors were formed in rats and mice following chronic exposure to formaldehyde. Formaldehyde produced genetic changes in a variety of standard tests.

“Pure” formaldehyde has an oral (rat) LD50 toxicity level of 100 mg/kg. The dermal LD50 in rabbits is 270 mg/kg, and LC50 following a 4 hour inhalation exposure to rats is 250-478 ppm. Exposure to formaldehyde vapor at concentrations in excess of 1 ppm may cause significant irritation of the eyes and respiratory tract. The irritation threshold appears to be 0.3 ppm. No pulmonary sensitization has been demonstrated in laboratory studies. Formaldehyde solutions can cause severe eye and moderate skin irritation. Repeated skin exposure to solutions of 2% or more formaldehyde has caused allergic skin reactions. Formaldehyde was found to be weakly active in a number of in vitro genotoxicity test, but inactive in vivo. Formaldehyde did not cause birth defects in rats inhaling concentrations up to 10 ppm. Lifetime inhalation of formaldehyde vapor at concentrations above 5 ppm for 6 hours per day, caused nasal tumors in laboratory animals. Many epidemiology studies have failed to link cancer in humans with occupational exposure to formaldehyde.

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EFFECTIVE DATE: July 11, 2008

SUPERCEDES: May 16, 2008