# TECHNICAL DATA SHEET - TDS

Dynamo Polyurethane Systems  Dynamo 500 Series

**Material Specification Criteria | Project Submittal Data**

Code Compliance Research Report: **CCRR – 0491**

## DYNAMO 500

**LIGHT DENSITY • OPEN CELL FOAM • NO MIX • TYPE I,II,III,IV and V CONSTRUCTION**

Dynamo 500 is a two component, light density, one to one by volume spray applied polyurethane foam. This product does not require mixing or recirculation. To produce Dynamo 500 requires the use of an "A" component (**Dynamo ISO**) and a blended "B" component (**Dynamo 500 RESIN**). Dynamo 500 is an insulation system designed for use in residential, commercial and industrial applications. Use in lieu of more traditional forms of insulating materials such as fiberglass, cellulose or other loose fill products. Dynamo 500 is a low VOC product allowing for 1 hour job site re-entry and 4 hour job site re-occupancy at applicable ventilation rates.

***Dynamo 500 contains ZERO ozone depleting blowing agents.***

Typical areas where Dynamo 500 spray polyurethane foam is applied:

EXTERIOR WALLS • INTERIOR WALLS • VAULTED or CATHEDRAL CEILINGS • BETWEEN FLOORS • CEILINGS

## TYPICAL PHYSICAL PROPERTIES

| PROPERTY | DYNAMO 500 VALUE | TEST METHOD |
|---|---|---|
| R - Value | R-Value at 1 inch: 4.1 | ASTM C518 |
| Open-Cell Content | >96% | ASTM D2856 |
| Core Density | Nominal 0.5 lb pcf | ASTM D1622 |
| Air Permeance | < 0.02 L/s . $m^2$ at .75 inches | ASTM E283 |
| Tensile Strength | 5 psi | ASTM D1623 |
| Water Vapor Transmission | 1" - 22 Perms | ASTM E-96 |
| Dimensional Stability 28 days @ 158°F, 97%RH | < 5% | ASTM D2126 |
| ASTM Method E84 Class I | Flame Spread ≤25 | Smoke Development ≤450 |

## BUILDING CODE CERTIFICATIONS / FIRE TEST DATA

| | | |
|---|---|---|
| EVALUATION SERVICE REPORT | INTERTEK | Report : CCRR - 0491 |
| BUILDING TYPES | Approved | I, II, III, IV, V-B: Nonstructural Insulation Material |
| FLAME SPREAD | ASTM E84 | Class I < 20 |
| SMOKE DEVELOPMENT | ASTM E84 | Class I < 400 |
| NFPA 259 | 2603.5.3 Potential Heat | 508 Btu/ft2 per inch |
| NFPA 285 | Pass: Standard fire test method for evaluation of fire propagation characteristics of exterior non-load bearing wall assemblies containing combustible components. | |
| NFPA 286 | Pass: Standard fire test method for evaluation of fire propagation characteristics of exterior non-load bearing wall assemblies containing combustible components. | |
| NFPA 286 AC377 APPENDIX X | Pass: Complies with the applicable requirements of ICC-ES AC377 Appendix X for use in attics and crawl spaces without a prescriptive ignition barrier. | |

**THERMAL BARRIER:** Current International Building Code (IBC) and International Residential Code (IRC) require that spray polyurethane foam be separated from the building interior by a code prescribed 15 minute thermal barrier or a code-approved alternative. Gypsum board at a minimum thickness of 1/2" is a code prescribed 15 minute thermal barrier. The following intumescent coatings when installed per manufacturer specifications are approved as thermal barrier alternatives for Dynamo 500:

### APPROVED INTUMESCENT COATINGS:

| DC315™ manufactured by: | Application Rates: |
|---|---|
| IFT, Inc | 20 Wet Mils - 13 Dry Mils |

**IGNITION BARRIER:** Dynamo 500 spray polyurethane foam meets the requirements of ICC-ES AC377 Apendix X for use in attics and crawl spaces without a prescriptive ignition barrier.

### APPROVED INTUMESCENT COATINGS:

| DC315™ manufactured by: | Application Rates: |
|---|---|
| IFT, Inc | 4 Wet Mils - 3 Dry Mils |

**VAPOR RETARDER:** Open cell foam insulation is vapor permeable and will allow some diffusion of moisture through the product. Consult local building code officials for specific requirements. Climate zone tables are available in current IBC and IRC publications.

**APPLICATION GUIDELINES:** Polyurethane foam systems should be processed through commercially available spray equipment designed for that purpose by a qualified professional applicator. Consult the current Dynamo Polyurethane Systems application guidelines for Dynamo 500 prior to installation. It is the responsibility of the professional applicator to thoroughly understand all equipment technical information and safe operating procedures that pertain to a spray polyurethane foam application. Always follow proper PPE guidelines.

### APPLICATION PARAMETERS:

| | | |
|---|---|---|
| Storage Temperature | 50°F-90°F | (10-32°C) |
| Substrate Temperature | 40°F-120°F | (4-49°C) |
| Equipment Static Pressure Dynamic | 1,100-1,500 psi | |
| Preheat Temperature (A&B/Hose) | 125°F-135°F | (52-57°C) |
| Drum Temperature (prior to use) | 80°F-90°F | (26-32°C) |
| Drum Storage Temperature (warehouse) | 50°F-90°F | (10-32°C) |

**Material Shelf Life:**
Properly stored unopened Dynamo 500 RESIN drums have a Six (6) month shelf life. Seal drums tightly after every use. Only combine Dynamo 500 resin with Dynamo 500 resin. Do not allow product to freeze. Other manufacturer's products should not be combined with Dynamo 500 Resin. Caution when changing from other manufacturer's products to Dynamo 500, follow recommended change over procedures.

**Safety and Material Handling:**
***MANDATORY!*** Respiratory protection. Dynamo Polyurethane Systems requires that supplied air and a full face mask be used during the application of any spray applied foam system. Visit Dynamo Polyurethane Systems website or CPI's website (www.polyurethane.org) for a copy of the Model Respiratory Protection Program developed by CPI. Wear a NIOSH approved respirator. The "A" component contains reactive isocyanate groups. Persons with known respiratory allergies should avoid exposure to the A (ISO) component. Applicators should ensure the safety of the job site and construction personnel by posting appropriate signs warning of spray foam work in progress and that all "hot work" such as welding, soldering and cutting with torches should take place no less than 3 - 5 feet from any exposed foam. If "hot work" must be performed all spray polyurethane foam should be covered with an appropriate fire or welder's blanket and a fire watch should be provided. The materials must be handled and used with **adequate ventilation** the vapors must not exceed the TLV (0.02 parts per million) for isocyanate. Avoid breathing vapors. Wear a NIOSH approved respirator. If inhalation of vapors occur, remove victim from contaminated area and administer oxygen if breathing is difficult. Call a physician immediately. Avoid contact with skin, eyes and clothing. Always open containers slowly and carefully, allowing any pressure to be released slowly and safely. Wear appropriate chemical safety goggles and rubber gloves when handling or working with these materials. In case of eye contact, immediately flush with large amounts of water for at least fifteen minutes. Consult a physician immediately. In case of skin contact, wash area with soap and water. Wash clothes before reuse. Consult this product's SDS sheet for further information.

**In Case of Spills or Leaks:**

- Utilize appropriate personal protective equipment (PPE)
- Ventilate area to remove vapors
- Contain and cover spilled material with a loose, absorbent material such as oil-dry, vermiculite or sawdust.
- Shovel absorbent waste material into proper waste containers
- Wash the contaminated areas thoroughly with hot, soapy water
- Report sizable spills to proper environmental agencies

**In Case of Fire:** ***It is recommended that a fire extinguisher be located in an easily accessible portion of the work area.***
**Extinguishing Media:** Dry chemical extinguishers such as monoammonium phosphate, potassium sulfate and potassium chloride. Additionally, carbon dioxide, high expansion (protein) chemical foam or water spray for large fires. Positive pressure ventilation of the work area is recommended to minimize the accumulation of vapors in the work area during application. Improper application techniques for this foam system must be avoided including: excessive thickness, off ratio material and spraying into rising foam. The potential results of improperly applied materials may include, but not limited to: excessive heat build-up that may result in a fire or offensive odors (which may not dissipate with time) and/or poor product performance due to improper density of the applied material. Large masses of sprayed materials should be avoided. When large masses are generated they should be removed from the area, cut into small pieces and allowed to cool before disposal. Failure to follow these recommendations may result in a fire.

**Thermal Barrier:**
Building codes IRC and IBC require SPF be separated from the interior of a building by an approved fifteen (15) minute thermal barrier, such as 1/2" gypsum wall board or equivalent, installed per manufacturer's instructions and corresponding code requirements. There are exceptions to the thermal barrier requirement: (1) Code authorities may approve coverings based on fire tests specific to the SPF application. (Example: covering systems that successfully pass large scale tests may be approved by code authorities in lieu of a thermal barrier). (2) SPF protected by 1" thick masonry does not need a thermal barrier. Certain materials that offer protection from ignition, called "ignition barriers," may not be considered as thermal barrier alternatives unless they comply with NFPA 286 or other similar full scale tests. Applicators should request test data and code body approvals or other written indications of acceptability under the code to be sure the product selected offers code-compliant protections.

**Material Change Over / Flushing Procedures:**
***This procedure must be followed whenever changing from one SPF system to another.*** Before Dynamo 500 is introduced into any equipment previous material must be purged. Failure to do so can result in product issues. Care must be taken to not allow any other material into the Dynamo 500 RESIN. Shut off all heats and spray machine. Disconnect air to both transfer pumps and remove the resin drum pump. Wipe all areas of pump clean and invert pump over bucket to ensure drum pump housing is emptied. Place pump into new resin drum. Remove spray gun from coupling block. With shut off valves closed connect air to resin transfer pump. Open resin side shut off valve only and allow material to pump into a clean bucket. Purging will take between 2-5 gallons. Re-connect cleaned spray gun and all air to transfer pumps. Turn on spray machine and begin heating procedures.
**Technical Assistance:** For additional assistance please contact the Dynamo Polyurethane Systems Technical Services Department (469) 799-9991.

**2:1 transfer pumps are recommended for material transfer from container to the proportioner.**

**CAUTION: Extreme care must be taken when removing and reinstalling drum transfer pumps so as NOT to reverse the "A" and "B" components.**

***DISCLAIMER:*** *To the best of our knowledge, all technical data contained herein is true and accurate as of the date of issuance and subject to change without prior notice. User must contact Dynamo Polyurethane Systems to verify accuracy before specifying or ordering. We guarantee our products to conform to the quality control standards established by Dynamo Polyurethane Systems. We assume no responsibility for coverage, performance or injuries resulting from use. Liability, if any, is limited to replacement of the product. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY DYNAMO POLYURETHANE SYSTEMS INC. EXPRESSED OR IMPLIED STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.*

CODE COMPLIANCE

**EMERGENCY NOTIFICATIONS:**
CHEMTREC : Material Leaks, Spills or Fire (800) 424-9300