

# UPC 500 MAX CCRR-0358

## TECHNICAL DATA SHEET & SPRAY GUIDELINES

### ULTRA-HIGH YIELD OPEN-CELL SPRAY FOAM



## UPC 500 MAX OPEN-CELL FOAM

UPC 500 MAX is a cutting-edge, high-yield, two component open-cell spray polyurethane foam. Its unique solution based chemistry does not require aggressive agitation like other ultra-light density foams. It is water blown (zero ozone depleting chemical) SPF that will improve the performance of the building envelope for commercial, residential and industrial applications. When installed, expands, seals voids, gaps and crevices creating a custom fit air barrier.

|  |                    |   |
|--|--------------------|---|
| <b>Viscosity (Brookfield cps) @ 77°F</b> | A Side: 200 ± 30   | B Side: 380 ± 100                       |
| <b>Core Density</b>                      | ASTM D1622         | 0.45 pcf ± 0.05                         |
| <b>Tensile Strength</b>                  | ASTM D1623         | 5 psi                                   |
| <b>R-Value @ 1"</b>                      | ASTM C518          | 3.8                                     |
| <b>Water Vapor Permeance</b>             | ASTM E96           | 9.0 Perms                               |
| <b>Air Permeance @ 3.5"</b>              | ASTM E2178 @ 75 PA | 0.00431                                 |
| <b>Dimensional Stability</b>             | ASTM D2126         | < 14.7%                                 |
| <b>Flammability</b>                      | ASTM E84 @ 4"      | 10 Flame Spread   250 Smoke Development |

**Large Scale Fire Testing:** UPC 500 MAX is tested and approved in accordance to AC 377 (NFPA® 286) Appendix "X" with 6 wet mils, 4 dry mils of DC 315® ignition barrier.  
 \*UPC 500 MAX is tested and approved in accordance to NFPA® 286 with 21 wet mils, 14 dry mils of DC 315® thermal barrier.

## SPRAY PARAMETERS

This chart is a **starting guide** to set temperatures and static pressures based on environment, mixing chamber size, and equipment. Adjustments should be made to account for substrate temp/type, hose insulation condition, speed of sprayer, wind factor, etc. A smaller mixing chamber, like Graco Fusion 01, will give you the best quality foam at optimal speed-to-yield ratio.

| Select Mixing Chamber:   | 4242   -01   |       |       | 5252   -02        |                 |       | 6060   -03        |                 |       |       |
|--|--|-------|-------|-------------------|-----------------|-------|-------------------|-----------------|-------|-------|
| Select Ambient Temp and Match to Mix Chamber                     | Temperature Set  |       |       | Temperature Set   |                 |       | Temperature Set   |                 |       |       |
|  | Hose <sub>t</sub>  | A     | B     | Hose <sub>t</sub> | A               | B     | Hose <sub>t</sub> | A               | B     |       |
| <b>Substrate Temperature</b><br><small>for standard wood</small> | > 90°F   | 119°F | 122°F | 125°F             | 122°F           | 125°F | 128°F             | 123°F           | 126°F | 129°F |
|  | 80°F   | 121°F | 124°F | 127°F             | 124°F           | 127°F | 130°F             | 125°F           | 128°F | 131°F |
|  | 70°F   | 123°F | 126°F | 129°F             | 126°F           | 129°F | 132°F             | 127°F           | 130°F | 133°F |
|  | 60°F   | 125°F | 128°F | 131°F             | 128°F           | 131°F | 134°F             | 129°F           | 132°F | 135°F |
|  | 50°F   | 127°F | 130°F | 133°F             | 130°F           | 133°F | 136°F             | 131°F           | 134°F | 137°F |
|  | 40°F   | 129°F | 132°F | 135°F             | 132°F           | 135°F | 138°F             | Not Recommended |       |       |
|  | CAUTION: Below 40°F a 1/4"-1/2" initial flashing layer may be applied to substrate to eliminate voids in cold weather. |       |       |                   |                 |       |                   |                 |       |       |
|  | 30°F   | 130°F | 133°F | 136°F             | Not Recommended |       |                   | Not Recommended |       |       |
|  | 20°F   | 132°F | 135°F | 138°F             |                 |       |                   |                 |       |       |
|  | 15°F   | 133°F | 136°F | 139°F             |                 |       |                   |                 |       |       |
| 10°F   | 134°F  | 137°F | 140°F |                   |                 |       |                   |                 |       |       |
| < 0°F  | Not Recommended  |       |       |                   |                 |       |                   |                 |       |       |
| <b>E30   H30   G2   PH-2</b>                                     | 1200 +/- psi   |       |       | 1200 +/- psi      |                 |       | 1300 +/- psi      |                 |       |       |
| <b>H40   H50   PH-40/55</b>                                      | 1200 +/- psi   |       |       | 1200 +/- psi      |                 |       | 1200 +/- psi      |                 |       |       |
| <b>E20</b>   | 1200 +/- psi   |       |       | 1400 +/- psi      |                 |       | N/A               |                 |       |       |

\*Important notice regarding yield and density. Many factors affect yield, including substrate temperature, substrate type, and pass thickness. Multiple passes will significantly reduce yield. Larger mixing chamber sizes and higher pressure settings will also reduce yield.

## ADDITIONAL INSTRUCTIONS

|  |  |
|--|--|
| <b>Agitation</b>                                 | Agitation is recommended at medium speed for 15-20 minutes prior to spraying (until turns light yellow). DO NOT agitate during application. Recommended agitators are Graco Low Viscosity Agitator #24C728 or Graco High Viscosity Agitator #26C150.   |
| <b>Starting Temperatures &amp; Recirculation</b> | Recirculate as needed to achieve chemical temperatures in the drums of 70°F-90°F for both the A & B-drums. When recirculating, set the primary heater for the A-Side to 85°F and the B-Side to 130°F. Use a laser thermometer to measure drum temperature towards bottom (the A-Drum should NEVER be warmer than the B-Drum).  |
| <b>Substrate Condition</b>                       | Substrate must be clean and dry and substrate moisture must not exceed 18%. When heating up a house with portable heaters, only heat up to 50°F, otherwise condensation may form on plywood. If metal substrate, only heat up to 45°F. Never use a portable propane powered heater.  |
| <b>Spray Technique</b>                           | Spray side-to-side. For a 24" on-center cavity spray 18" from surface. For a 16" on-center cavity spray 16" from surface.  |
| <b>Winter Conditions</b>                         | When the indoor air temperature is below 45°F, care should be taken to heat building up to, but no more than 50°F.   |
| <b>Humidity</b>                                  | When humidity levels exceed 50% and temperatures are below 85°F, reduce the A-Side temperature by 5°F +/-.   |
| <b>Contamination</b>                             | The B-Side is sensitive to contamination from other products. Never recirculate another product into the UPC 500 Max. Never combine different products. Make sure transfer pump is properly cleaned between different products before putting into B-Drum. Shrinking foam that pulls away from the studs (that doesn't deflate much) is an indication that it may be contaminated. Large open cells is another indication of possible contamination. |
| <b>Max/Min Pass Thickness</b>                    | Max practical pass thickness is 3.5-6" before resulting in splash-back. Min recommended pass thickness is 1".  |
| <b>Proper Temp. Sets</b>                         | As a general rule of thumb, the hose temperature should always be 2-5°F lower than the A-Side temp, and the A-Side 2-5°F lower than the B-Side temp.   |

## ADDITIONAL INSTRUCTIONS (continued)

### †Heated Hose

The hose sensor is one of the most important assessment indicators. The hose temperature should always be set first to the desired final chemical temperature at gun. The hose temperature should rarely be adjusted. The primary heaters should be increased if chemical is too cold. A poorly insulated hose may compromise adequate heating and drastically change required temperature settings.

### Pressure Settings

Higher pressure settings create more mist and require greater distance from the cavity resulting in more overspray. Higher pressure will generally lower yield. As a rule-of-thumb, you should practice spraying as close to 1000psi dynamic as possible.

## TROUBLESHOOTING GUIDE

### Delamination Pulls Away From Studs

If the foam does not adhere to itself, then allow the first layer to cool off before applying the next pass.

Lower the primary heater and hose temperatures by 3°F. Spray out chemical in hose (approx 2.5 gallons or 1,000 board feet) until new reduced temperature is achieved. If problem does not resolve, lower temperature by another 3°F, and continue to repeat process until problem is resolved.

### Voids Behind Foam

The foam may be too cold. Increase all heaters by 5°F. Spray out chemical in hose (approx 2.5 gallons) until new increased temperature is achieved. Repeat process until problem is resolved.

### Deflates

Lower the primary heater and hose temperatures by 3°F. Spray out chemical in hose (approx 2.5 gallons or 1,000 board feet) until new reduced temperature is achieved. If problem does not resolve, lower temperature by another 3°F, and continue to repeat process until problem is resolved.

### Cells Very Large

Lower temperature on A-side primary heater by 3 to 5°F. Chemical may not be thoroughly agitated, try agitating further. If problem persists then contamination may be present.

### Color

If the foam appears yellowish, then it is too cold, primary heaters should be increased 3 to 5°F. Should appear "white."

### Poor Yield

B-Side may not be thoroughly mixed, may need agitating longer. Make sure a collapsing blade agitator is being used.

### Important

**IMPORTANT:** Regardless of proportioner heating capacity, a minimum starting drum temperature of 70°F is necessary to bring viscosities of A&B in alignment to prevent off-ratio foam and increase yield; spraying from cold drum chemical may scorch B-side polyols with primary heaters that are too powerful. B-side chemical should change from clear to "creamy" color when properly mixed and recirculated.

## Cautions and Recommendations:

UPC 500 MAX is designed for an application rate of 1 inch minimum to 6 inches maximum per pass. Once installed material has cooled, it is possible to add additional layers to achieve the required installed thickness. UPC 500 MAX is not designed for use as an exterior roofing system.

UPC 500 MAX is designed for installation in most standard construction configurations using common materials such as, concrete, metal, wood and wood products. Foam plastic installed in walls or ceilings may present a fire hazard unless protected by an approved, fire-resistant thermal barrier with a finish rating of not less than 15 minutes as required by building codes. Rim joists/header areas in accordance with the IRC® and IBC® may not require additional protection. Foam plastic must also be protected against ignition by code-approved materials in attics and crawl spaces.

As with all SPF systems, improper application techniques should be avoided and any defective product replaced with properly installed materials. Examples of improper application techniques include but are not limited to, excessive application thickness, off-ratio material and spraying into or under rising liquid foam. Potential hazards of excessive application thickness are dangerously high cure temperatures that may result in fire. Any large masses of SPF should be removed to an outside safe area, cut into smaller pieces and allowed to cool before discarding into trash receptacle. Additionally, off-ratio materials can result in offensive odors that may not dissipate. SPF insulation is combustible and must be kept away from high-intensity heat sources, such as welding, or cutting torches.

## Job-site Warnings:

Applicators should ensure the safety of the job-site and construction personnel by posting appropriate signs warning that all "hot work" such as welding, soldering, and cutting with torches should not take place until a thermal barrier or approved equivalent is installed over any exposed polyurethane foam.

Contractors should communicate with other trades working in proximity to the spray application area. Appropriate warning signs at each entryway must be posted that clearly indicates that spray foam activity is taking place and proper respiratory protection is required to enter. Non SPF personnel and occupants should be vacated from the building during the application of SPF. Proper Ventilation during spraying and afterwards at minimum 10 Air changes per hour. Re-Entry: 2 hour ventilation period before personal protective equipment is no longer required for trades and inspectors. Re-Occupancy: after 24 hours.

## Health and Safety Information:

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling or processing UPC 500 MAX spray foam system. Before working with this product, you must read and become familiar with available information (e.g., Safety Data Sheet (SDS)) on its risks, proper use and safe handling. All contractors and applicators must use appropriate respiratory, skin and eye Personal Protective Equipment (PPE) when handling and processing spray foam systems.

Refer to Spray Polyurethane Foam Alliance (SPFA®) :AX-171 Course 101-R Chapter 1: Health, Safety and Environmental Aspects of Spray Polyurethane Foam and Coverings. [www.spraypolyurethane.com](http://www.spraypolyurethane.com)

Refer to the Center for the Polyurethanes Industries (CPI): Model Respiratory Protection Program. [www.spraypolyurethane.org](http://www.spraypolyurethane.org)

## Shelf Life and Storage:

UPC 500 MAX has a shelf life of approximately six months from the date of manufacture when stored in original, unopened containers at 50-80°F. This material should be stored in a secure location and never in direct sunlight. Storage temperatures above the recommended range will shorten shelf life.

## Vapor Retarder:

UPC 500 MAX is intended for indoor applications, and is not a vapor retarder. It is vapor permeable and will allow for some diffusion of moisture through the insulation. The following considerations are needed:

- (1) A vapor retarder needs to be considered in the design of the building envelope in cold climates, such as zones 4 and higher in the U.S., as defined in 2004 Supplement to the IRC®, Table N 1101.2;
- (2) A vapor retarder also needs to be considered where high interior humidity conditions exist. Refer to local codes and manufacturer's written specifications to ensure compliance.

**DISCLAIMER:** Please read all information in the general guidelines, technical data sheets, application guide and safety data sheets (SDS) before applying material. UPC products are for Professional Use only and preferably applied by professionals who have prior experience with the UPC products or have undergone training in application of UPC products. Published Technical data and instructions are subject to change without notice. Contact your local Universal Polymers representative or visit our website for current technical data and instructions. All guidelines, recommendations, statements, and technical data contained herein are based on information and tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. It is the user's responsibility to satisfy himself, by his own information and tests, to determine suitability of the product for his own intended use, application and job situation and user assumes all risk and liability resulting from his own use of the product. We do not suggest or guarantee that any hazards listed herein are the only ones that may exist. Neither seller nor manufacturer shall be liable to the buyer or any third party for any injury, loss or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements, whether verbal or in writing, other than those contained herein shall not be binding upon the manufacturer, unless in writing and signed by a corporate officer of the manufacturer. Technical and application information is provided for establishing a general profile of the material and proper application procedures. Test performance results were obtained in a controlled environment and Universal Polymers makes no claim that these tests or any other tests, accurately represent all environments. UPC is not responsible for typographical errors.