Closed-Cell Spray
Application Guide

PLUSOL-R-102-17 & PLUSOL-R-102-15

Chemistry for Good

Rigid. Strong. Energy-Efficient.

PLUSOL-R-102-15 & PLUSOL-R-102-17 are two-component (A+B) closed-cell spray polyurethane foam systems, engineered for professional applicators who require maximum thermal performance, durability, and structural support.

Formulated with precisely balanced polyol and isocyanate components, they ensure:

- **Excellent adhesion** to a wide range of substrates (concrete, metal, wood, gypsum, etc.)
- **Superior thermal insulation** with very low λ-values, reducing energy costs and increasing efficiency
- **High closed-cell content** (>93%), providing exceptional moisture resistance and long-term dimensional stability
- **Rigid and durable foam structure**, contributing to mechanical strength and weather resistance
- **Versatile application range**, suitable for roofs, façades, cold storage, basements, and industrial facilities.

1.Safety & Handling

- **Personal Protective Equipment (PPE):**
  - Full-face respirator or hood with appropriate filters
  - Protective coveralls
  - Chemical-resistant gloves
  - Goggles or face shield
- **Ventilation:**
  - Mechanical ventilation during spraying and for a minimum period after
  - Fresh air exhaust to exterior (e.g. 0.3 ACH or higher)
- **Safe handling of raw materials:**
  - Follow SDS for both A (isocyanate) and B (resin/blowing agent)
  - Avoid exposure to vapors, atomized mist
  - Containers must be kept closed when not in use
  - When changing between formulations, flush and clean lines thoroughly

2.Substrate Preparation

- Substrates must be **clean, dry, and free from dust, grease, and loose particles**
- **Moisture Content:** Maximum 12% (timber), no condensation, dew, or frost on surfaces
- **Concrete:** Ensure minimum 28 days cure, moisture <5%
- **Metal:** Degrease and remove rust; apply primer if required
- **Gypsum & Plasterboard:** Must be structurally sound and dry
- **Note for Closed-Cell Systems:** Due to the low vapor permeability of closed-cell foam, substrates with residual moisture may trap water and lead to blistering or adhesion loss. Strict moisture control is recommended.

3. Environmental Conditions

- **Environmental Conditions**
  - Ambient Temperature: 10–35 °C
  - Substrate Temperature: 10–45 °C
  - Relative Humidity: <80% recommended
- **Cold Weather Guidance:**
  - Apply thinner lifts (15–20 mm per pass)
  - Allow cooling before next pass
  - Pre-warm substrates using hot air blowers if required
- **Hot Weather Guidance:**
  - Avoid direct sunlight during spraying
  - Ensure substrate temperature does not exceed 45 °C
  - Extra caution: closed-cell systems contain low-boiling blowing agents (HFO/HFC/pentane), which may be affected by high substrate temperatures.

4. Equipment Setup & Machine Settings

Parameter	Recommended Value
Mixing Ratio (Volume A:B)	100:100
Component Temperatures	40–45 °C
Hose Temperature	40–45 °C
Pressure	90–110 bar
Cream Time	3–5 sec
Tack-Free Time	6–8 sec
Applied Density	33–35 kg/m³

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5.Application Procedures

- **Spray Technique:**
  - Maintain consistent gun distance (40–60 cm)
  - Overlap passes by ~50% for uniform coverage
  - Avoid spraying directly into rising foam
- **Lift Thickness:**
  - 15–30 mm per pass (final thickness according to design, up to 200 mm).
  - Allow cooling between lifts
- **Detail Work:**
  - "Picture framing" around edges and joints before filling cavities
  - Pay attention to junctions, penetrations, and complex geometries
- **Post-Application Protection:**
  - Protect foam from UV with coatings, paints, or claddings

6. Field Quality Control

- **Foam Density Test:** Check cut samples (Target density 35–40 kg/m^3)
- **Adhesion Test:** Pull-off adhesion on representative areas
- **Visual Inspection:** Uniform cell structure, no shrinkage or voids
- **Thermal Conductivity Check:** If required, test samples in lab λ = 0.022–0.024 W/m·K (product-specific).

7. Storage & Shelf Life

- Store upright in original sealed containers
- **Storage Temperature:** 15–25 °C
- **Transport Temperature:** 10–25 °C
- **Shelf Life:**
  - Component A (Polyol): 6 months
  - Component B (Isocyanate): 12 months
- Protect against moisture and direct sunlight

8. Troubleshooting

Issue	Possible Cause	Corrective Action
Foam shrinkage	Off-ratio, low substrate temp	Adjust ratio/temperature
Brittle foam	Excess isocyanate	Balance ratio
Poor adhesion	Moist or dirty substrate	Clean and dry surface
Irregular cells	Wrong pressure/temperature	Optimize equipment
Scorching / discoloration	Too thick lift	Apply thinner passes

9.Disclaimer

The information in this Application Guide is based on laboratory and field data. Application conditions may vary and are beyond the manufacturer's control. Applicators must ensure suitability for each specific project.

10.Technical Asisstance

For additional technical asisstance ;

📍 **Address:**

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