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## Advanced Materials

# Arathane® 5753-A/B (LV) Urethane Casting Compound

**GENERAL:**

Arathane® 5753-A/B (LV) Casting Compound is a translucent, amber, two component polyurethane casting compound which, when cured, provides excellent electrical insulation to electrical/electronic parts.

Arathane® 5753-A/B (LV) Casting Compound exhibits excellent reversion resistance under heat and high humidity conditions. As a cured system, this material meets NASA outgassing properties critical for applications in outer space and high vacuum environments.

Arathane® 5753-A/B (LV) Casting Compound is typically recommended for encapsulating coils, trimpots, potentiometers and modules with complicated circuitry and/or stress sensitive components.

**APPLICATIONS:**

- Stress sensitive components
- Non-terrestrial encapsulating applications

**BENEFITS:**

- Excellent hydrolytic stability giving improved reliability
- 100% solids for improved ease of use and handling
- Low outgassing, meeting NASA requirements
- High thermal shock resistance offering greater component protection and reliability.

**TYPICAL PROPERTIES*:**

| **Arathane® 5753 A** | |
|---|---|
| Viscosity @ 77ºF (25°C), cPs | 25 - 55 |
| Specific gravity, g/cm$^3$ | 1.16 - 1.26 |
| Flash point, ºF (°C) | 351(177) |
| Percent solids | 100 |
| As supplied form | Amber Liquid |

**Arathane® 5753 B (LV)**

| | |
|---|---|
| Viscosity @ 77ºF (25°C), cPs | 6,500 - 8,500 |
| Density, g/cm$^3$ | 0.85 - 0.95 |
| Flash point, open cup, ºF (°C) | 450 (232) |
| Percent solids | 100 |
| As supplied form | Translucent liquid |

**Mixed System Viscosity**

| Typical values* @ 77ºF (25°C), Brookfield Spindle 6, 10 rpm (cPs.) | |
|---|---|
| Initial | 5,000 |
| After 20 minutes | 8,000 |
| After 45 minutes | 28,000 |
| After 60 minutes | 70,000 |

*Typical properties are based on Huntsman's test methods. Copies are available upon request.

## PACKAGING:

Contact Customer Service for packaging information.

## SYSTEM PREPARATION:

Exposure of part A to low temperatures for prolonged periods may cause crystallization. Part A must be re-liquified by heating to 158°F (70°C). Heat part A until clear amber solution is achieved. Remove container from oven. Do not disturb contents. Allow material to cool to 77ºF to 104ºF (25°C - 40°C) in a controlled environment, do not force cool.

Measure height of the precipitate from outside of bottle. Do not use if level of precipitate is above 3/8 inches (0.6cm) or if liquid remains cloudy or contains gelled particles. Contact our Customer Service Department with lot number, date received and condition of bottle.

Material is ready for use if level of precipitate is below 3/8 inches. Do not agitate. Slowly decant clear resin out of the bottle without disturbing the precipitate. Enough material has been packaged to allow for any precipitate and to assure sufficient Part A. For best result, filter Part A through a nylon sieve, 10 - 25 micron size.

Use entire bottle so remaining material will not be contaminated with moisture. If this is not possible, any remaining material must be blanketed with dry nitrogen or argon and the cap securely tightened. Store at 77ºF to 104ºF (25° - 40°C) for best long-term stability.

**MIXING:**

Container should be plastic, glass, or metal. Paper and wooden containers or utensils should be avoided because of their high moisture content. Weigh Part B into container first. Add Part A to container. (Do not use Part A if precipitate level is greater than 3/8 inches).

Slow machine mixing or hand stirring will minimize air entrapment. Complete and thorough mixing of Part A and B is essential for optimum end properties.

Mixture may be vacuumed by drawing 29 - 29.5 inches of Hg for 2 - 3 minutes. Enough room should be allowed for expansion inside the container as the material will tend to rise and "break".

**MIX RATIO:**

| | Part by weight |
|---|---|
| Arathane® 5753 A | 20.0 |
| Arathane® 5753 B (LV) | 100.0 |

**PROCESSING:**

| | |
|---|---|
| Recommended cure times* | 24 hours at 77ºF (25°C) or<br>8 hours at 203ºF (95°C) |

* Cure schedule results in approximately 90% of final properties. Additional room temperature or elevated temperature curing is required for 100% properties.

**PHYSICAL PROPERTIES:**
**(Typical values)**

| **Property** | **Typical value** | **Test Method** |
|---|---|---|
| Hardness, Shore A | 45 - 60 | ASTM-D 2240 |
| Tensile strength at break, psi (MPa) | 350 (2.4) | ASTM-D 412 |
| Elongation, % | 250 | ASTM-D 412 |
| Tensile modulus, psi (MPa) | 140 (0.96) | ASTM-D 412 |
| Tg, °C (°F) | < -69 (<-92) | TMA |
| Thermal conductivity, W/m-K | 0.16 | FTM SCM C-43 |
| Coefficient of thermal expansion, ppm/°C | | |
| Alpha 1 | 76 | TMA |
| Alpha 2 | 170 | |
| Fungus resistance | Non-nutrient | |
| Maximum continuous use temperature, °C | 130 | |

**Outgassing at $10^{-6}$ Torr**

| **Property** | **Value** | **Test Method** |
|---|---|---|
| Total mass loss, % | 0.41 | ASTM-E 595 |
| Collectible volatile condensable material, % | 0.03 | ASTM-E 595 |

**ELECTRICAL PROPERTIES:**
**(Typical values)**

| Property | Typical value | Test Method |
|---|---|---|
| Volume resistivity, ohms-cm | | |
| @ 25°C | $9.3 \times 10^{15}$ | ASTM-D 257 |
| @ 95°C | $2.0 \times 10^{13}$ | |
| Dielectric strength, 1/8-inch thick, volts/mil, | 350 | ASTM-D 149 |
| Dielectric constant | | |
| @ 25°C, 60Hz | 3.33 | ASTM-D 150 |
| @ 25°C, 1MHz | 2.90 | |
| Dissipation factor | | |
| @ 25°C, 60 Hz | 0.027 | ASTM-D 150 |
| @ 25°C, 1 MHz | 0.025 | |
| Arc resistance, sec. | 75 | ASTM-D 495 |

**STORAGE:**

When stored in a dry place in its original sealed original container at a temperature between 64°F and 104°F (18°C and 40°C) the components of Arathane® 5753-A/B (LV) have a six months shelf-life. The components should not be exposed to direct sunlight. Arathane® 5753-A/B (LV) is moisture sensitive. Partial containers should be blanketed with dry nitrogen or argon prior to being tightly resealed after each use.

Work in a well-ventilated area and use clean, dry tools for mixing and applying. For two component systems, combine the resin and hardener according to mix ratio. Mix together thoroughly and use immediately. Material temperature should not be below 64°F (18°C) when mixing.

**PRECAUTIONARY STATEMENT:**

Huntsman Advanced Materials Americas LLC maintains up–to-date Material Safety Data Sheets (MSDS) on all of its products. These sheets contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products. Users should review the latest MSDS to determine possible health hazards and appropriate precautions to implement prior to using this material.

**First Aid!**
Refer to MSDS as mentioned above.

**KEEP OUT OF REACH OF CHILDREN**

**FOR PROFESSIONAL AND INDUSTRIAL USE ONLY**

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