

## ULTRALLOY 3300 SERIES

A series of flame retardant, (UL 94V-0) high strength, systems with excellent physical properties. A series of flame retardant Liquid Molding Compounds with high physical properties. The tensile strength is 12,600 psi and flexural strength is 16,500 psi after post cure. This series is available in a 2, 4, 14, and 28 minute gel time.

- Flame retardant, meets UL 94V-0
- 1:1 by volume
- Available in 4 speeds
- High physical properties

	PHYSICAL PROPERTIES	TEST METHOD	3310	3310-28	3311	3312
PHYSICAL PROPERTIES	Mix Ratio by volume A:B by weight A:B	Calculation	100:100 100:95	100:100 100:95	100:100 100:95	100:100 100:95
	Gel time 100 grams @ 25°C	ASTM D-2971	14 min.	28 min.	4 min.	2 min.
	Color (cured)	Visual	Amber / translucent	Amber / translucent	Amber / translucent	Amber / translucent
	Hardness Shore	ASTM D-2240	85 D	85 D	85 D	85 D
	Viscosity mixed @ 25°C cps	ASTM D-4878	400 ±100	400 ±100	400 ±100	400 ±100
	Specific Gravity mixed @ 25°C	ASTM D-4669	1.20	1.20	1.20	1.20
	Shrinkage inch/inch See shrinkage paragraph	ASTM D-2566	.0011-.003	.0011-.003	.0011-.004	.0011-.004
	Demold time @ 70°F 1/8" thick	HAPCO TEST	6-12 hours	6-12 hours	2-4 hours	45-90 minutes
	Weight per cubic inch (lbs.)	Calculation	0.0433	0.0433	0.0433	0.0433
PRODUCT PROPERTIES	Tensile Strength (psi)	ASTM D-638	12,600	12,600	12,600	12,600
	Elongation %	ASTM D-638	7.7	7.7	7.7	7.7
	Modulus of Elasticity psi (000)	ASTM D-638	461	461	461	461
	Izod Impact (ft.lbs/in.) notched unnotched	ASTM D-256	0.51 2.20	0.51 2.20	0.51 2.20	0.51 2.20
	Heat Distortion Temperature (°C) 66 psi 264 psi	ASTM D-648	86°C 78°C	86°C 78°C	86°C 78°C	86°C 78°C
	Flexural Strength (psi)	ASTM D-790	16,500	16,500	16,500	16,500
	Flexural Modulus psi (000)	ASTM D-790	315	315	315	315
	Flame Rating	94V	UL 94 V-0	UL 94 V-0	UL 94 V-0	UL 94 V-0

**NOTE: Before use, reference material handling, processing, and safety notes located at the end of this brochure.**

## ULTRALLOY SERIES

### **MATERIAL HANDLING, PROCESSING & SAFETY NOTES**

#### **POSTCURE:**

For maximum HDT and maximum physical properties, products should be post cured immediately after initial cure, 80°C for 8-24 hours for rigid materials and 60-65°C for 8-24 hours for flexible materials. Some post cure conditions may vary from above for certain materials. Contact Hapco for specific recommendations.

#### **DEMOLD & CURE TIMES:**

Demold and final cure time can be accelerated with the addition of postcure heat 100-175°F (38-79°C) . To retain working life, heat the mold not the material for best results. Increasing the mold temperature to 80-100°F (26-38°C) will accelerate demold and cure times by up to 50%. For full cure polymers require at least 7-10 days. Final cure for faster gel materials (3-6 minute gel) is 3-7 days. Please be aware that size and mass effect demold and cure times. The customer and geometry will ultimately determine demold time.

#### **HARDNESS NOTE:**

The hardness progresses more slowly in the longer working life systems. The hardness progression can be accelerated by using the faster version or by curing with mild heat. Hardness and cure progress will be retarded, slowed down, when the temperature falls below 70°F.

#### **SURFACE PREPARATION TO PREVENT ADHESION:**

To prevent adhesion to the mold, use a GREASE-IT release agent. The following are recommended: GREASE-IT II, GREASE-IT IV, GREASE-IT V, GREASE-IT WAX P, or GREASE-IT WAX LT, use GREASE-IT FDG when a Food & Drug grade release is required. For best results, apply in a few thin coats, drying between coats. Porous surfaces, i.e. wood, plaster, etc, must be sealed thoroughly before release is applied. Use multiple coats of a good coating, such as: a high grade lacquer or urethane lacquer.

#### **SURFACE PREPARATION FOR ADHESION:**

For applications where adhesion is desired, the surface must be cleaned, abraded and dried. Sandblasting and mechanical roughing are the preferred ways of abrading surfaces to be bonded. For added adhesion to metals, use Primer 200 and for added adhesion to plastic, use Primer 810. Make sure all surfaces are clean, dry, and free from moisture.

#### **COLD TEMPERATURES:**

**CAUTION - COLD TEMPERATURES** - Part A may freeze or crystallize in cold temperatures. Part A may appear to be striated, thicken, or solidify. This situation can easily be corrected. Place the cover on the Part A loosely (do not seal) and place in an oven set at 170-180°F (77-83°C) for 3-6 hours and for drums heat for 6-12hours. Reseal, allow to cool and then mix thoroughly.

#### **MIXING:**

**IMPORTANT: Before each use, mix Part B thoroughly, when pigmented, before proportioning out the required amount.**

Components may separate and should be mixed before each use. Mix, only when ready to use, by adding the curing agent to the resin portion and blending together thoroughly. Be sure to scrape and stir in all material sticking to the sides and bottom of the mixing container. Do not use paper containers or wooden mixing sticks. They may contain moisture. For best results, use plastic or coated containers, and metal or plastic sticks.

#### **MACHINE MIXING AND DISPENSING:**

Use HAPCO'S **RAPIDFIL**, **MINIFIL**, and/or **RAPIDSHOT** Dispensing Equipment for fast, reliable, and efficient dispensing.

#### **CASTING:**

Pour in a thin unbroken stream into the lowest point in the cavity or mold. This will help break up some of the air entrapped during mixing.

## ULTRALLOY SERIES

### **MATERIAL HANDLING & SAFETY NOTES (cont.)**

#### **CASTING:**

Pour in a thin unbroken stream into the lowest point in the cavity or mold. This will help break up some of the air entrapped during mixing.

#### **SHRINKAGE:**

Shrinkage or dimensional variation is largely influenced by 5 factors:

1. Mass (total volume and thickness)
2. The temperature of the material
3. Maximum temperature reached during the exotherm (reaction).  
The faster the gel time, the higher the exotherm, the greater the shrinkage.
4. The temperature of the mold
5. The thermal properties of the mold material.(Insulator vs. Conductive)

Geometry, part thickness, and total volume vary in each design, therefore, the customer is responsible to test and determine the shrinkage factor to be used. The values in the brochures are for comparative reference only, using ASTM testing procedures.

#### **AIR RELEASE:**

Use HAPCO'S ANTI-AIR to aid in air release (see Technical Bulletin). In some products, ANTI-AIR can cause a slight haze to cloudiness. This has no effect on properties.

#### **CLEAN UP:**

Cured polymers are difficult to remove. It is best to clean tools and equipment immediately after use. For best results use Hapco's A-TAK.

#### **STORAGE:**

Store both components in an area with a temperature range of 68-90°F (20-32°C). Store in a dry place off of cement floors and on shelving if possible. Containers should be kept tightly closed.

#### **SHELF LIFE:**

Polymer systems have a minimum shelf life of six months when unopened. The shelf life on Hapco products begins from the date of invoice for that product shipment. Hapco's shelf life only pertains to containers that are unopened and in their original condition. Once the container is opened Hapco has no control or responsibility for the shelf life.

#### **RESEALING:**

Many polymers are moisture sensitive, reseal, using one of the following methods:  
Blanket with nitrogen or use a hair dryer for 30 seconds to cover with dry air.

#### **PRECAUTIONS:**

**CAUTION:** The MSDS should be read thoroughly before using this product.

Skin or eye contact with polymers should be avoided. The use of gloves, eye protection, and face masks are strongly recommended. All polymers, as a general practice, should be used in well-ventilated areas. Spot ventilation is most effective. Contaminated clothing should be removed immediately and the skin washed with soap and water or waterless skin cleaner. Should accidental eye contact occur, wash thoroughly with water and consult a physician.

The information presented here is based on carefully conducted laboratory tests and is believed to be accurate. However, results cannot be guaranteed and it is suggested that customers confirm results under their conditions and in their applications before production use.

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