GKN ADDITIVE
FORECAST 3D

Urethane Casting

For a short run of functional and aesthetically pleasing production parts

About

Urethane Casting is the next step after a 3D printed prototype. Our proprietary process uses SLA, FDM, or CNC master model patterns to create the highest quality cast-urethane parts available..

Benefits

- **Scalability:** optimal for low- to mid-volume production
- **Aesthetics:** high-quality aesthetics available
- **Broad selection of materials:** more than 50 different resins available with a number of general use resins in stock
- **Size:** large part size capability
- **Complexity:** complex overmolds
- **Custom finishes:** cast in any color or texture
- **Durability:** able to operate in demanding environments
- **Reliability:** 100% U.S.-based manufacturing for supply-chain reliability and security
- **Compliance:** ITAR (ISO 9001:2015) and AS9100D-certified facilities

Applications

- Functional prototypes and end-use parts
- Batch production medical devices
- Aircraft interior parts
- Consumer products
- Specialty overmold requirements
- Complex prototypes
- Aesthetic marketing models

This computer housing was made using cast urethane with cast-in custom color with UABS 83 (PX224) material and post-process pad printing.

This rear auto light lens was made using cast urethane with cast-in custom colors and a Clear Uoptic 3 (multiprocess cast process) material. The rear light bucket used UABS 83 material and cast urethane with post-process chrome plating.

Process

1. GKN Additive (Forecast 3D) reviews the order file to evaluate and align on customer requirements.
2. Project technicians review the customer's CAD files to ensure data integrity and part printability, providing feedback for potential improvements.
3. Once aligned and approved on the order objective, additive technicians start the project.
4. Technicians construct the 3D model from the client-supplied file, using one of three in-house technologies (determined by size and complexity).
5. Master is measured and checked into our QC database.
6. Master is then finished to the client's specifications.
7. Master is yet again measured to ensure all critical features are present after finishing stage is complete.
8. Master is then moved to our molding department, where a silicone mold is created.
9. Silicone mold then moves to our casting department, where the client-specified material is injected into the silicone tool to form the urethane casting.
10. Each casting goes through our QC department for a third time to verify tolerances and print call outs if applicable.

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Standard lead time	4–6 days for first article (dependent on geometry, size, and capacity)
Standard accuracy	± .007" first inch plus .003" per inch thereafter
Minimum wall thickness	Let one of our project engineers review your CAD.
Maximum part size	The largest RTV capabilities in the United States; largest part to date is 8' x 4' x 3'
Typical quantities	Mold yields up to 20 castings per tool (varies by geometric complexity and material)
Finishes	The sky is the limit. We have two production paint booths and a team of master craftsmen who can produce very high-quality options.

Materials

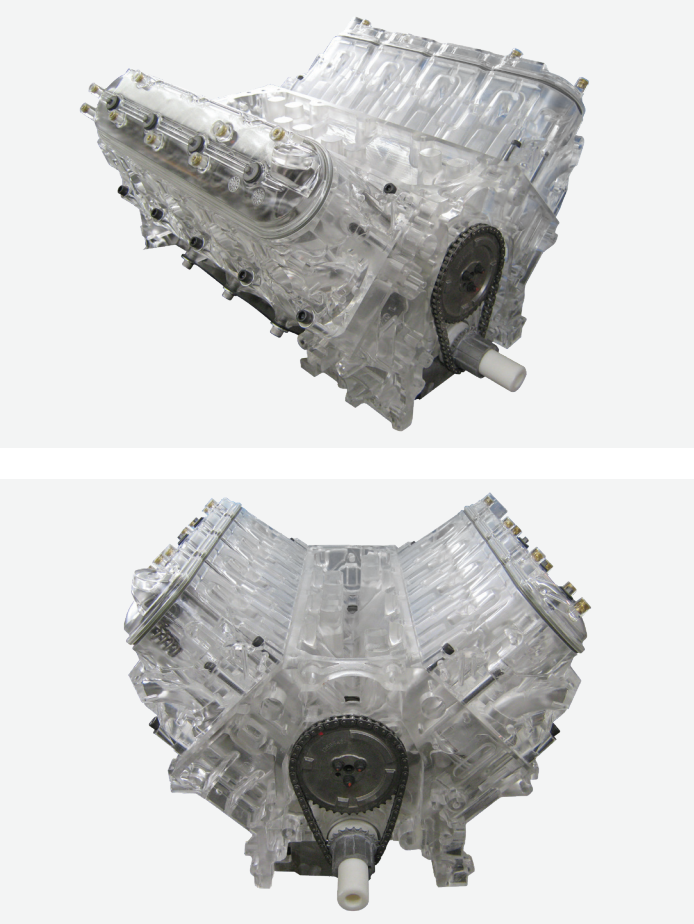
PX-224 (UABS 83): our preferred general-purpose cast urethane for strong, tough parts that have excellent impact strength

PT-8952FR (UABS FR3): excellent choice for production of fire-retardant parts with very good appearance and tough, durable properties as well as Izod impact strength, tensile strength, and flexural strength. Meets UL 94 V-0 requirements at 0.100 inch thickness and meets requirements of FAR 28.853 for flammability.

PT-8902 (UABS 85): a superior high-performance urethane with a notched Izod impact strength greater than 2.0! This robust, all purpose resin is our most popular choice for tough ABS-like prototoypes and is certified to USP Class VI requirements.

PT-8976 (HIB) "High Impact Black": for applications that require very tough, durable cast components, this is your resin. Only available in black, this material has good rigidity and stiffness with a very high modulus. With a notched Izod impact strength rated at 2.64 ft/lb right out of the tool, or up to 3.17 with a post-cure, it's able to withstand rigorous testing requirements.

CSD 1085 (Uoptic3): our most popular water clear plastic; offers very high UV stability and faster delivery



This full-scale cast engine is composed of 3D printed, Uoptic3 clear cast urethane, and OEM parts.

Find out how GKN Additive (Forecast 3D) can take your product from prototype to production. Visit forecast3d.com today or contact us directly at (877) 835-6170 or hello@forecast3d.com to learn more.