THE LOST FOAM CASTING PROCESS

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Process Steps

1. Mold foam pattern sections.
2. Age pattern to allow dimensional shrinkage.
3. Assemble pattern if it is a multiple piece pattern.
4. Build cluster (multiple patterns per cluster).
5. Coat cluster.
6. Dry coating.
7. Compact cluster in flask.
8. Pour metal.
9. Extract cluster from flask.

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1. Mold Foam Pattern Sections

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2. Age Patterns

- The foam material used to create the pattern shrinks in much the same manner as a typical casting.
- Patterns are “aged” by allowing them to rest at room temperature for a period of 5 to 7 days.
- Patterns may also be force aged in a drying oven to allow for quicker use.

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3. Assemble the Pattern

- Production patterns are assembled using a precision, automated gluing machine.
- Glue is printed to one section of the foam and then pressed against the adjoining piece.
- Multiple piece parts can be built up in this way and produce very complex geometry

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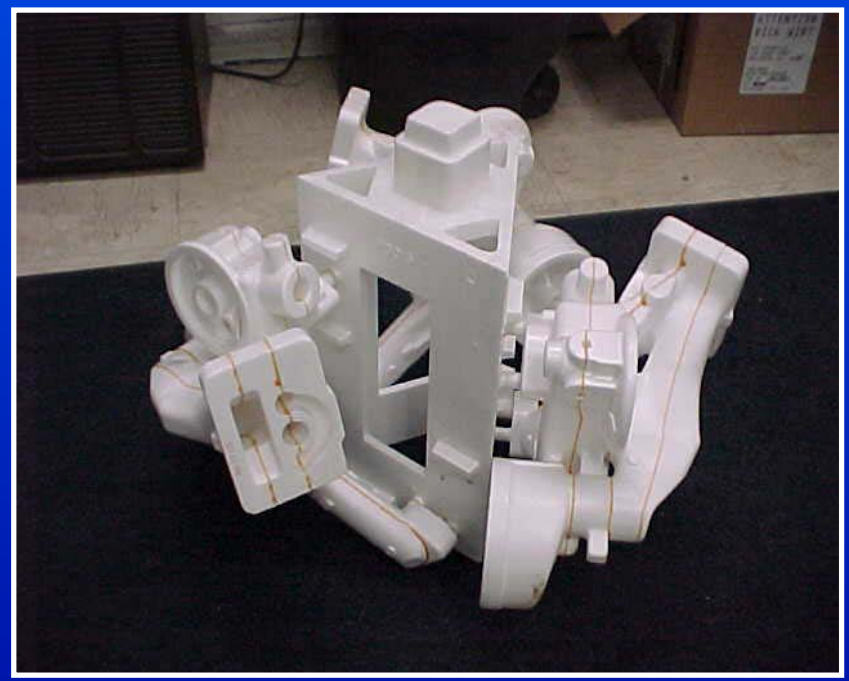
4. Clustering

- Glue individual patterns to sprue.
- Number of patterns per sprue is dependent on part size and/or configuration.
- Molded sprue is manufactured similar to foam pattern



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5. Coating

- Coating parameters are verified before coating cluster.
- Coating is mixed continuously to maintain properties.
- Cluster may be hand dipped or by automated robot station.

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6. Drying

- Coating is dried in an oven at 120-140°F(49-60°C) for 3 to 5 hours.

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7. Compaction

- Cluster is delivered to the pouring line by conveyor.
- Cluster is placed into flask and held in position by a fixture
- Fixture is timed to release the cluster during the compaction cycle.

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7. Compaction (Cont.)

- Sand is rained into flask from overhead bin.
- Compaction tables can be either vertical or horizontal in orientation and vibrate the flask during filling.
- Sand is compacted from approximately 90lb/ft^3 to 100 lb/ft^3 by the compaction table.

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8. Metal Pour

- Metal is poured to displace the polystyrene pattern.
- Metal may be poured by hand or with an automatic ladle.

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9. Extraction

- Casting is allowed to cool in sand for a predetermined period.
- Flask is then dumped on to a shakeout conveyor.
- Loose sand around the casting cluster helps protect the parts from damage.

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9. Extraction (Cont.)

- Castings proceed through shakeout to remove loose sand and coating

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Final Casting