

# **Centrifugal Investment Casting**

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**A Wardle (Casters) & Company Ltd**

# Introduction

- Why we're here.
- Small family business established in 1958.
- Historically production focused mainly in the jewellery and allied trades.
- Casting in brass, bronze, silver and most carats of gold.

# Overview

- Precision casting using the “Lost Wax” process.
  - The “lost wax” process
  - Centrifugal & Induction casting
  - Alloys currently used
  - In place casting
- Used for both simple and complex, high precision components.
- Benefits of using this type of casting.

# The Process

- Original pattern made with sprue feed attached.
- Vulcanised (heat and pressure) rubber mould made from the master.
- Rubber mould hand cut to remove pattern.
- Wax injected into the mould cavity to produce replica.

# Rubber Moulds

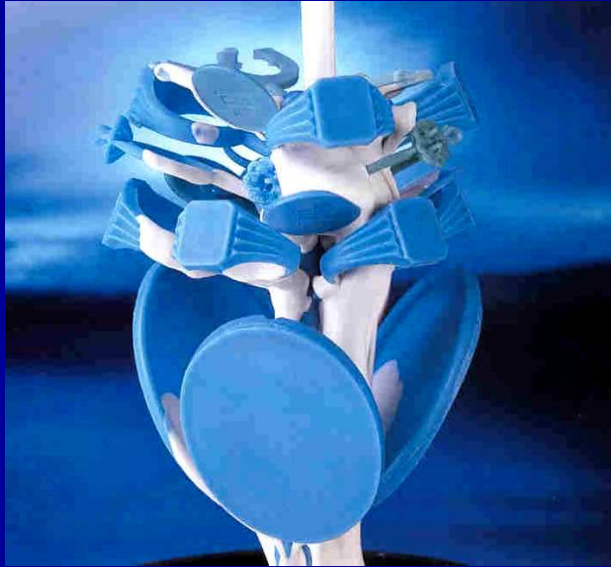


Courtesy of Hoben International Ltd

# The Process

- Wax injected into the mould cavity to produce replica.
- Waxes built onto 'tree' dimensions 4" by 6".

# Wax Trees



Courtesy of Hoben International Ltd



Courtesy of Hoben International Ltd

# The Process

- Investment powder (Powder/Water ratio 100/38, ceramic strength and accuracy)
- Vacuum investing

# Vacuum Investing



Courtesy of Hoben International Ltd

# The Process

- Investment powder (Powder/Water ratio 100/38, ceramic strength and accuracy)
- Vacuum investing
- Burnout
- Throwing of metal

# Casting of Metal



Propane/Oxy Melting



Removal

# The Process

- Investment powder (Powder/Water ratio 100/38, ceramic strength and accuracy)
- Vacuum investing
- Burnout
- Throwing of metal
- Douse and Clean (glass bead and pickle)
- Inspection/recycle

# Centrifugal casting

- Naked eye temp control
- Gas and propane melt 600-1300C
- Can reception heat 400-700 C
- Counter balanced arm revolving at approx 250 rpm

# Induction casting

- Controlled pour and melt
- Metal and can reception heat computer controlled
- Melt poured under vacuum in sealed atmosphere

# Metals applicable to this process

- Copper Alloys (Brass, Bronze etc)
- Silver
- 9-22ct Yellow, White & Red Golds

# Benefits of using this type of casting.

- Quick prototyping
- Low cost (no expensive machining or welding etc.)
- Any volume 1-100,000
- No restriction on shape and complexity
- Good surface finish
- Ideal for plating
- Reusable scrap
- Reliable production