

## Product Information – Water Soluble Wax

### General Properties

- Water soluble wax is a speciality material used for the manufacture of soluble cores
- Soluble wax products are suitable for all types of core configurations
- Some formulations contain fibres for increased strength and resistance to cracking

### Benefits

- Good injection characteristics
- Good surface finish
- Ability to produce a wide range of core geometries
- Excellent dimensional stability, the filler imparts greater stability and minimises cavitation
- Can easily be leached from patterns

### Quality Control

- It is essential for the production of high quality castings that wax properties are correctly and tightly controlled
- The strict quality control procedures employed by Blayson ensure consistency and compliance with specifications
- cmf recommended tests and SPC form the basis of the quality regime:
  - melting (drop) point
  - congealing point
  - ash content
  - penetration
  - viscosity



## How to use Water Soluble wax

Soluble wax is very different to other wax products, typically with a high filler ratio, high viscosity, different melt characteristics and a tendency to entrap air.

1. Melt wax in kettle/tank at 80 - 85°C
  - a. As soon as liquefied the wax must be agitated continuously
  - b. Agitation should be slow, around 10 -15 rpm
  - c. Agitator and tank design should not entrap air through cavitation
2. Transfer to the injection press is typically by container
  - a. Care must be taken when filling the container not to introduce air
  - b. Similar care must be taken when filling the wax tank on the press
3. The tank on the injection press should always be agitated as in (1) above, in order to prevent settlement of filler and ensure even temperature distribution
4. The injection press temperature profile must be balanced i.e. tank, transfer system, and injection nozzle at the same temperature
5. To obtain the best results the injection nozzle diameter must be maximised to the largest size the press will allow
6. The sprue diameter in the die must be maximised (larger than for pattern wax) and the length of the sprue minimised
7. Best results are obtained by injecting soluble wax at the lowest possible temperature and highest pressure
  - a. Typical injection temperature 55 - 65°C
  - b. Typical injection pressure 20<35 bar (300<500psi)
  - c. Flow control set at maximum flow rate
  - d. Start at low temperature and increase pressure, only increase temperature if results remain poor
  - e. Increase temperature if necessary in 1° increments and allow 24 hours to stabilise
  - f. Reduce flow rate as required to optimise results
  - g. Warming the die at the start will help improve surface finish and minimise any tendency for chipping at edges

## Disposal

Cores can be removed by immersion in a 10% solution of hydrochloric acid. Citric acid may be substituted but this will increase the wax removal time.

A separate technical information sheet is available on leaching of water soluble wax products.

Wash patterns in clean water after removal from tank. Patterns should be stored in an airtight container to prevent deterioration of surface. Any residues should be neutralised with a suitable material and then disposed of with normal foundry waste.