CHAPTER 6

RECOMMENDATION FOR FUTURE WORK

The present work has only examined the effect of resin type and formulation and sand type on cold bending strength of test pieces produced at a constant dump condition (temperature of 250°C and time of 90 seconds). Thus, a comprehensive understanding for further improvement of resin properties as well as shell mold performances will require further investigation. Recommendations for future work are as follows:

(1) The effect of different dump temperatures (220-280°C) and different dump times (75-120 seconds) conditions for each resin type and for suitable resin blends should be studied.

(2) Other significant mechanical properties of shell test pieces including hot strength, hot deformation, creep, and thermal cracking need to be determined. These are vital properties since the shell molds and cores have to withstand the loads and thermal shock produced when liquid metal with very high temperature of up to 1500°C is poured into molds.

(3) The gas evolution characteristics of the resin or resin blends coated sand should be understood in order to examine the defect on surface casting i.e. pinholes.

(4) The change in resin coated sand properties on storage due to high humidity in Thailand is crucial and this should be further investigated.

(5) Since structure of resin play a vital role in controlling its flow and curing behavior, optimization of the resin structural isomers and molecular weight giving optimum properties for use as binder in foundry application is very fruitful. This development could lead to the advancement of Thai resin industry.

(6) Effects of different inorganic components in the resin having direct influence on reclaimed sand properties should be investigated.

In addition, a number of casting foundry produce cold set process by using furan resin. This research suggests that a similar experimental work can also be carried out for furan resin. Results obtained from this work may serve as a practical guideline for further improvement of polymer and foundry industries in Thailand.