

CHAPTER VI

CONCLUSION

6.1 CONCLUSIONS

The ratio of silicone resin, silicone fluid and curing agent determines its various properties. The degree of crosslinking is strongly dependent on the mass fraction of silicone fluid and on the amount of a curing agent. The optimum amount of curing agent is found to be 1.5 phr for all types of silicone resins. In addition, it was observed that the mechanical properties of silicone elastomer required at least three weeks to fully develop.

The system of silicone elastomer that is composed of silicone resin: RTV 585 and RTV 300 were suitable for breast model application. The optimum composition of the inner portion of a breast model was made from a mass ratio 1:1.3: 0.015 of RTV300, silicone fluid and curing agent while the skin layer (from RTV 585) was fabricated with a mass ratio of 1: 0: 0.015, respectively. The development in the mechanical properties becomes stable within three weeks. The strength of the skin layer was improved by increasing cross-link density whereas the inner breast portion was softened by silicone oil according to the above composition that was found to closely imitate a real human breast

Our experimental results revealed that the elastic modulus of the skin layer (imitating the human skin) is approximately 3.3 MPa which is comparable to that of the real human skin. The results can be summarized in Table 6.1. This product development provides a cost-competitive (less than 2,000 baht/item) and a more durable breast model than the currently imported one.

Table 6.1 Mechanical Properties of Breast Training Model

Skin layer characteristics		
RTV 585	100	parts
Catalyst	1.5	parts
Gel time (ASTM D4473)	187	min.
Max. strength (ASTM D412)	3.3	MPa
Elongation at break	897	%
Hardness shore A (ASTM D2240)	22	
Interior portion characteristics		
RTV 300	100	parts
Catalyst	1.0 - 1.5	parts
Silicone oil	100 - 130	parts
Gel time	~ 6 - 9	hr.
Modulus	25 - 40	Pa

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6.2 TYPICAL DIMENSIONAL BREAST MODEL

