

STANDARDS FOR THERMAL PROTECTIVE QUALITIES FOR NON-INSULATED IMMERSION SUITS; ARE THEY RELEVANT ?

E. Myrseth & B. Holand

SINTEF Div. Medical Technology, Trondheim, Norway.

Address for reprints:

SINTEF Div. Med. Tech.,
N-7034 Trondheim,
Norway

Both insulated and non-insulated immersion suits have been tested at SINTEF Div. Medical Technology for thermal protective qualities since 1985. These tests have mainly been carried out according to International Maritime Organization (IMO) Resolution A 521(13)3.2.2., where the tests procedures are specified. Based on our experience not even massive leakages of cold water into non-insulated immersion suits have disqualified suits with respect to fulfill the requirements of thermal protective qualities. To test the relevance of these requirements, a non-insulated "suit" of the poorest quality possible was made and tested according to specifications given in the IMO Resolution given above.

Suits were made of thin plastic bags (generally used to collect domestic garbage), and "arms" of the same material were taped on to allow use of a lifejacket. The test subjects wore thermistors (YSI 700) measuring the required skin and rectal temperatures, and were dressed with clothing as prescribed by the IMO Resolution for non-insulated immersion suits. The tests lasted 1 hour, and the water temperature was kept at +5°C.

For all the test subjects the temperatures on the hand, foot and lumbar region were higher than +10°C after 1 hour of immersion, and the rectal temperature did not fall more than 2°C below the normal level during this period. Furthermore all subjects were able to pick up a pen and write after completion of the test. None of the suits were completely waterproof, and the amount of water ingress during the tests were estimated to be between 200 and 500 ml.

Based on these tests, we feel that any non-insulated immersion suits that are able to keep a person floating and relatively dry, will satisfy the thermal requirements specified by IMO Resolution A 521(13). As a consequence of this, it is our opinion that the test for thermal protective qualities for non-insulated immersion suits should be redesigned, alternatively omitted.