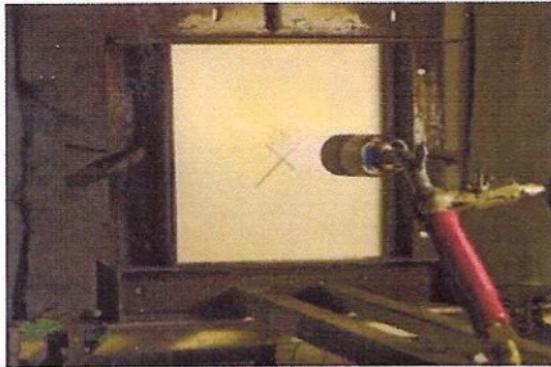


Burn Test MIL-STD2031



Test Specific's

Ambient Temperature 20oC (68oF)
 Torch Fuel Propane
 Torch Diameter 38 mm (1 1/2")
 Torch Distance from Panel 203 mm (8")
 Flame Spread at Panel Surface 100 mm dia. (4")
 Temperature at Panel Surface 800oC (1480oF)
 Heat Flux at Panel Surface 80 kW/m2
Panel set up as specified for DTRC burn test

Location / Year

UNIVERSITY of ALABAMA, BIRMINGHAM

Fabricator / Applicator

AG Pipe Technologies/Alphagen Materials

Fabrication Details: Resin & System

1/4" Thick Test Samples:
 Cerarmix C-1 and AR-1 w/mat reinforcement
 General Purpose Resin

Technical Data

The tests were conducted according to the DTRC Burn-Through Test MIL-STD2031 adopted as the standard for the US Navy, each panel exposed to the flame for 30 minutes. The conditions and procedure were as follows: (see Test Specific's above)

Service Conditions

See Test Specific's above.

Design Considerations

To test and evaluated C-1 and AR-1 at a thickness of 1/4". Per MIL-STD 2031. (FIRE AND TOXICITY TEST METHODS AND QUALIFICATION PROCEDURE FOR COMPOSITE MATERIAL SYSTEMS USED IN HULL, MACHINERY, AND STRUCTURAL APPLICATIONS INSIDE NAVAL SUBMARINES)

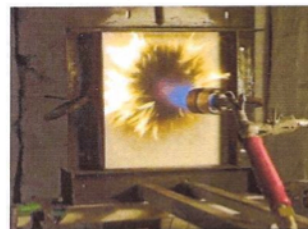
STANDARD published 02/26/1991 by Military Specifications and Standards

Comments

Temperatures on the rear (colder side)of the panels were measure by three thermocouples, And after a period for cooling the weight loss of each panel was measured. **AR1** is our new **CERARMIX** Abrasion-Resistant coating, **C1** the Chemical-Resistant coating.

Panel Thickness	Actual Weight before testing	Weight after testing	Mass Loss after 30 min.
AR1 0.23"	1048g	923g	12%
C1 0.26"	866g	693g	20%

Pictures of the panels at the start of the Burn-Test and after completion are shown below. *Both panels self-extinguished after the torch heat was removed, with some delamination.*



60 seconds after flame ignition



60 seconds after flame out

See back page for Temperature Rise Graphic.

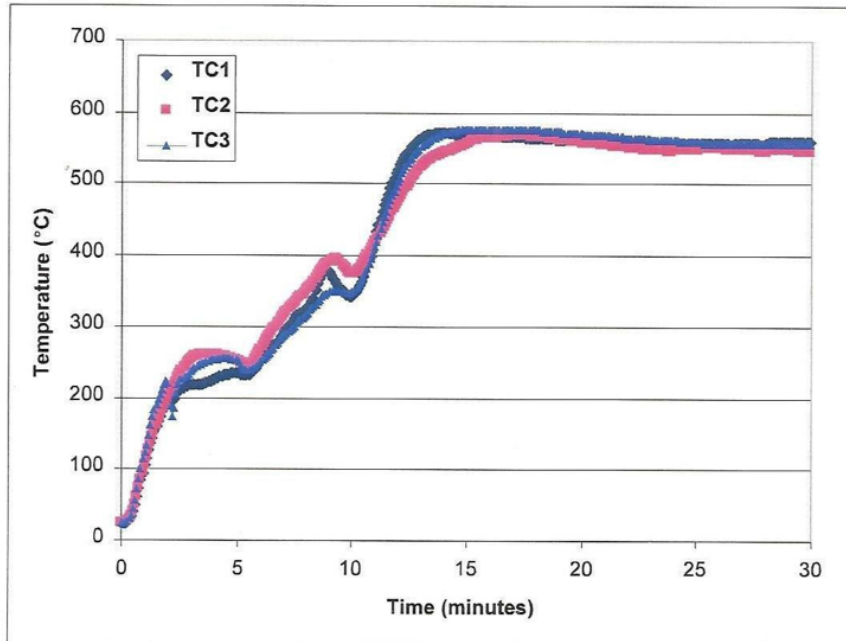


Figure 1. Temperature profile on the cold side for panel AR-1

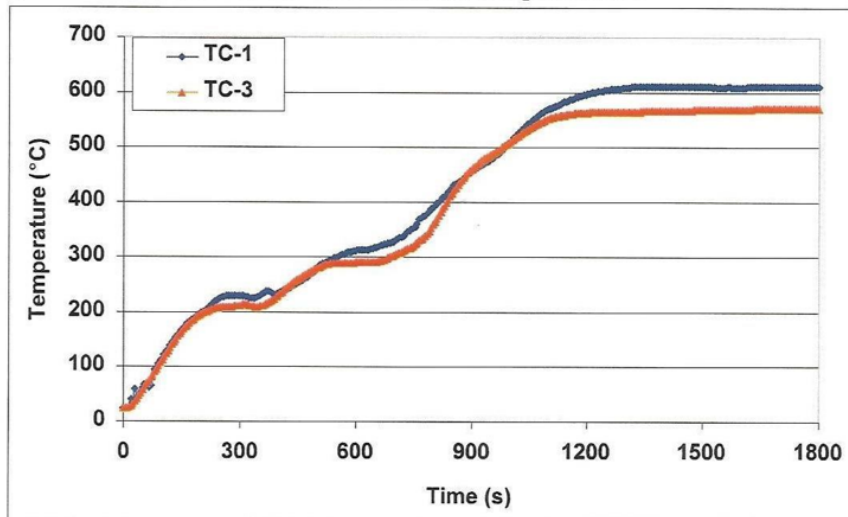


Figure 2. Temperature profile on the cold side for panel C1

Progressive temperature readings on the rear of the panels throughout the test