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**NRC - CNRC**

**Second Report on the Slurry Erosion Resistance of AG Pipe Technologies/Alphagen  
Materials  
(PO# 071526 - 1)**

**Summary**

Alphagen products: AR1 and ER1 of different construction, exhibited superior slurry jet erosion resistance compared to Grade 2205 stainless steel which is a competing material for certain erosion corrosion service applications.

Both incurred similar SJE volume losses.

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Tests were recently completed by the National Research Council of Canada on three samples of pipe coatings submitted by AG Pipe Technologies/Alphagen Materials. The tests used a slurry of 10:1 by weight Agso 200 silica sand to water in a recirculating pipe loop, with a jet velocity of 48 ft/sec and impact angle of 45°, for a duration of 60 minutes. The results were compared to 2205 Duplex stainless steel as a benchmark for erosion-resistant performance.

The first, *PI*, was a typical silicon carbide material at 65% solids loading, trowelled in place, as is common in the industry. Its weight loss and wear characteristics were inferior to the SS 2205.

The second, *SI*, was the same material sprayed in place using our patented application equipment and method. This was also inferior to SS 2205, but 25% better than *PI*.

The third, *ARI*, was our own monolithic abrasion-resistant coating *CERARMIX*. Its performance compared favourably with SS 2205 in every way, as the following figures show:

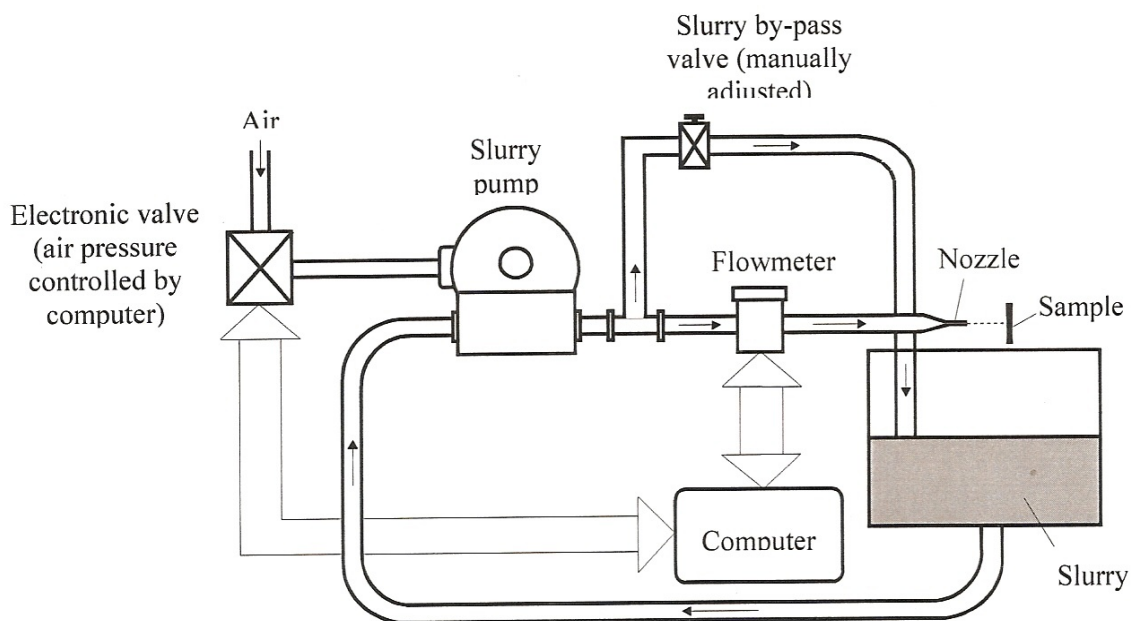
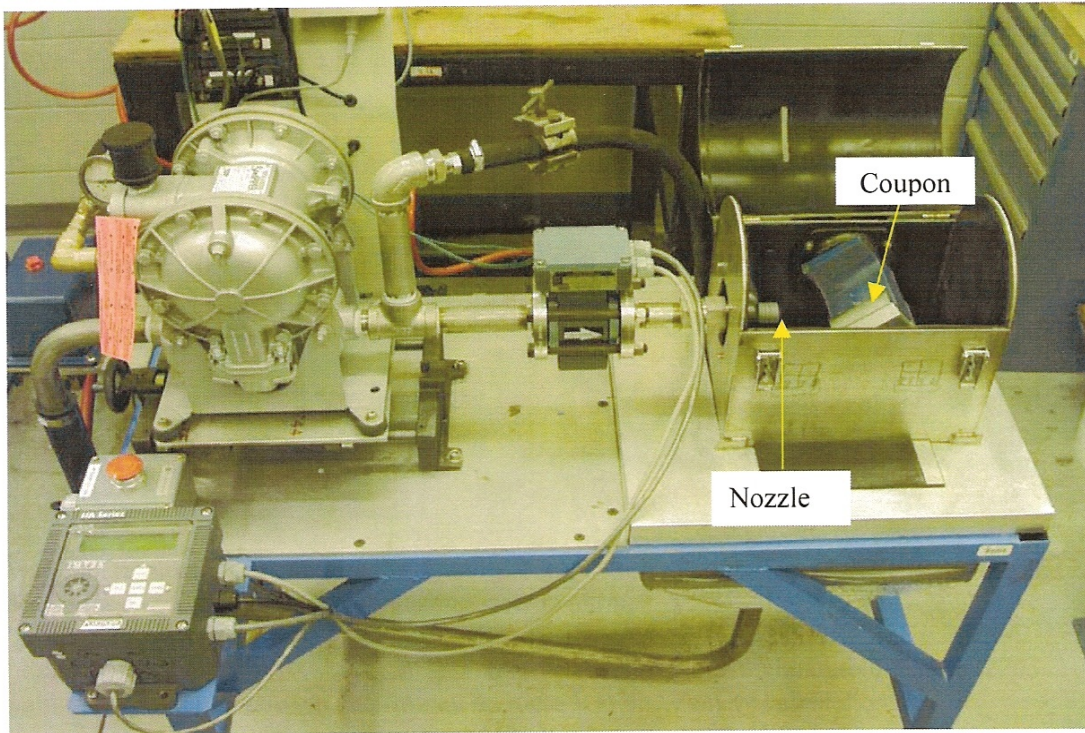
Material	45° Impact Angle SJE Test	
	Weight loss (gms)	Volume Loss (mm <sup>3</sup> )
Pipe Coating <i>PI</i>	0.0958 <sup>(1)</sup>	49.43
Pipe Coating <i>SI</i>	0.1224	39.00
Pipe Coating <i>ARI</i>	0.072	9.06
2205 Duplex <i>SS</i>	0.121	15.17 <sup>(2)</sup>

Notes: (1) Low weight loss probably due to comparatively low bulk density compared with the sprayed-on version of the same material

(2) Calculated in the laboratory from its weight loss and published density value

## APPENDIX: SLURRY JET EROSION TEST PROCEDURE

The SJE evaluation equipment is shown below.



Schematic of Slurry Jet Erosion (SJE) test system

