

Bend Testing
for
Evaluation of Maxon CRS Effect on Ductility of Metals

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Submitted to

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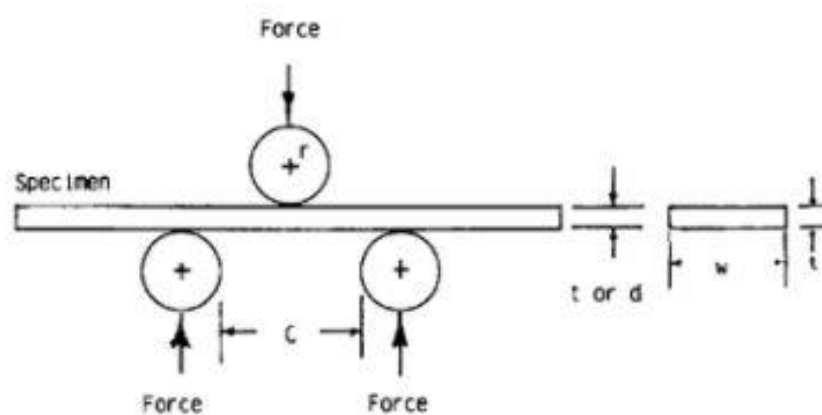
Overview:

Bend tests were performed at the Cal Poly Composites Laboratory to evaluate the effect that the Maxon CRS has on metals. ASTM standard E290-14 was used to guide the experiments, although modifications were made that were needed at our particular lab with our equipment. Eight coated samples and eight clean samples were tested with a guided bend set up. The eight coated samples were tested after curing for more than 7 days.

Experimental Setup:

The bend test type used was a Guided bend, no die test.

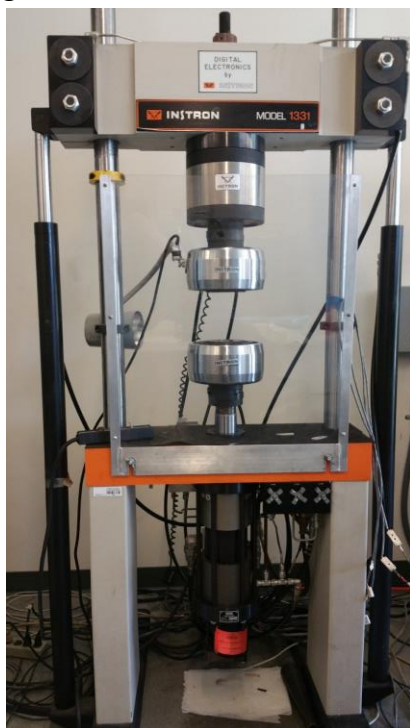
The schematic for this test type can be seen in the following image:



The fixtures used in our lab to perform the experiments are shown below:



The testing machine used as well as the setup with the fixtures are shown below:



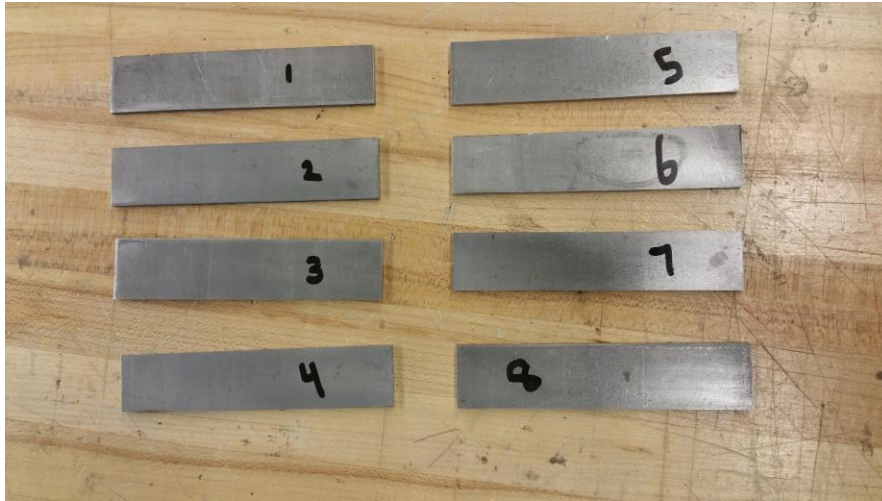
Specimen preparation:

Specimen were thoroughly cleaned and cut to specified dimensions. The specimen were cut with an abrasive blade and measured for accuracy of the cut. Naturally the cuts were not perfect and there were differences in dimensions; nevertheless, the dimensions were within similar ranges.

Below is a table of the dimensions of the specimen:

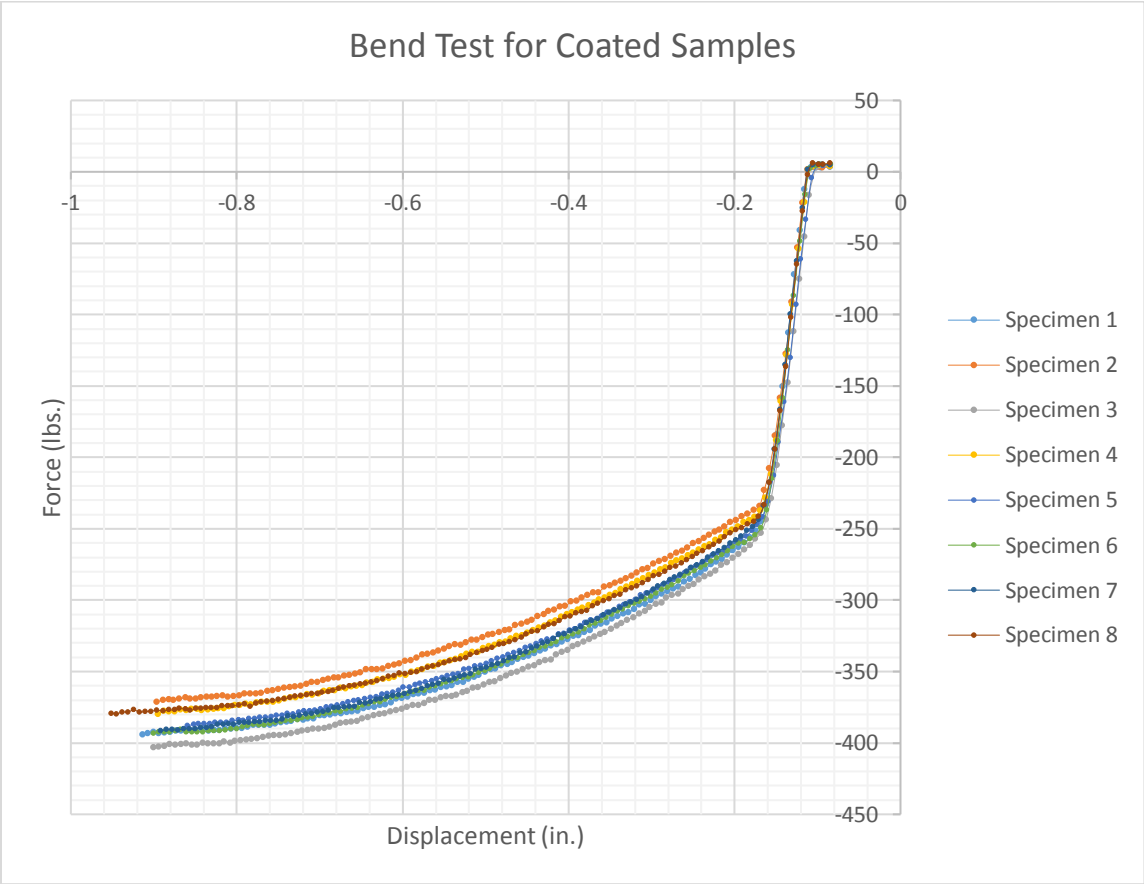
Clean Specimen				Coated Specimen			
Specimen #	Length (in)	Width (in)	Thickness (in)	Specimen #	Length (in)	Width (in)	Thickness (in)
1	4.332	0.932	0.124	1	4.225	0.940	0.124
2	4.333	0.968	0.124	2	4.224	0.902	0.124
3	4.312	0.961	0.124	3	4.200	0.962	0.124
4	4.331	0.936	0.124	4	4.225	0.925	0.124
5	4.324	0.942	0.124	5	4.235	0.964	0.124
6	4.328	0.930	0.124	6	4.223	0.955	0.124
7	4.323	0.984	0.124	7	4.217	0.940	0.124
8	4.325	0.961	0.124	8	4.209	0.995	0.124

Below are the clean specimen before bend testing:



Below are coated specimen before testing:





After analyzing and interpreting the results, there is a strong indication that the Maxon CRS has no harmful effects on the mechanical properties of metal associated with bending. The yield and ultimate strengths were in similar regions and the trends were very similar. More tests are desired to make a strong conclusion that the Maxon CRS has no harmful effects of the mechanical properties of metals. Tensile tests will also give more insight to the effects the Maxon CRS has on metal.