General Material Genetics Institute

REMOTE ANNEALING
OF
HIGH CARBON STEEL PARTS

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INTRODUCTION

The investigation of a phenomenon known as "warm-forming" was initiated in January of 1981 and continues to the present. The mechanism used to explore this phenomenon is a series of psychokinesis or PK parties. A PK party consists of approximately 25 persons of varied backgrounds gathered for the purpose of bending metal objects (stainless steel silverware, rods, bar stock, etc.) which are not otherwise easily deformed. The party lasts between one and two hours during which time each of the attendees is instructed to command a metal object to bend while being lightly held between the thumb and index finger. The effect which most people experience at these parties is that the metal becomes warm and soft for a short period of time. During this short interval the metal object is easily deformed using little manual force. A more detailed description of the PK party, its format and the materials required is provided in Reference 1.

It has been speculated in Reference 2 that the momentary warming and softening of the metal is caused by the participant's ability to transmit information into the metal. Somehow energy from within the metal may cause intense local heating along the grain boundaries and subsequent slippage when minimal or moderate force is applied. Repeated successes (between 85 and 90% of participants experience the "warm-forming" phenomenon) in over 30 PK parties together with the explanation postulated and described in detail in Reference 2 has given rise to the question: Is it possible for a state-change or an annealing-like process to occur in hardened metals simply by exposing them to the environment of a PK party?

The experiment documented in this report was conceived to explore the possibility that hardened metals, repeatedly exposed to the PK party environment, could undergo a change in physical properties. The participants at the PK parties were not aware of the experiment. The experiment was conducted from September 15, 1982 to November 19, 1982 and consisted of a series of surface hardness measurements of high carbon steel samples before and after exposure to the PK party environment. These measurements were then compared with similar

results taken periodically from a control sample that was purposely isolated from these party activities. The experiment clearly demonstrated a significant reduction in the exposed group's tensile strength properties. This reduction in tensile strength, verified from repeated surface hardness measurements, is believed to be the result of PK Party exposure and the process is called "Remote Annealing Radiation" or RAR.

APPROACH

Four high carbon steel hacksaw blades were purchased from a local hardware store and removed from their protective covers. The blades were marked and divided into two evaluation groups. One blade was chosen as the control sample and was isolated (two mile separation) from the subsequent series of PK parties. The other three blades were chosen for repeated (four) exposures at these parties and were periodically tested using professional testing equipment and procedures. A simple test set-up was used to ensure repeatability of the precision hardness measurements and similarly the samples were maintained at room temperature during exposure, storage, test, and transportation. The control sample was tested periodically during the course of the experiment. All three blades in the second group were tested on both sides of their flat surfaces to obtain an average hardness number after each RAR exposure. Figure 1 shows the location of the test points designated 1 through 6. All these test points are located in the middle (between the top of the blade and the cutting teeth) of the blade to avoid variations in hardness which normally occur near the edges of a hacksaw blade.

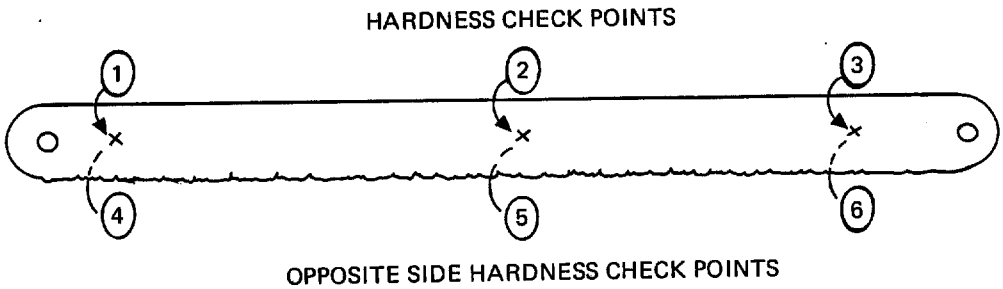

Figure 1. Hardness Test Point Areas

Table 1 lists the dates of all the events in this experiment. Note that the exposed group was tested twice following the third exposure.

TEST PROCEDURE

Before hardness testing began, both surfaces of each blade were inspected for possible discoloration or other surface imperfections which might alter or influence the subsequent surface hardness measurements. This was accomplished using a stereo microscope set at a magnification of twenty (20X). All four blades appeared to have uniform surface conditions.

A Rockwell Superficial Scale 15N (15 kg. load, diamond cone indenter) was used for the hardness measurements. Before each test, the apparatus was checked with a certified 15N-scale hardness test block to ensure precision performance. Also the same 2-inch diameter anvil was used to support each test specimen. Frequent calibration of the test equipment was made to ensure precision hardness measurements.

Each test of a sample consisted of six measurements, three per side at the three locations indicated in Figure 1. At the end of each test, the data were marked to indicate the testing rate, operating mode, location number, date, time, and final cumulative mean indicated on the 15N dial.

TEST RESULTS

All test results are summarized in Table 2. The measurements taken at the beginning of the experiment indicated that the blades had nearly the same initial hardness. Periodic testing of the control sample over a two month interval revealed that the variability in the hardness measurement never exceeded $\pm$ 2 units on the Rockwell scale. Examination of the test measurements associated with the exposed group indicates a persisted reduction in hardness level accompanied by a fluctuation in test to test readings similar to that recorded for the control sample.

Table 1
EVENT SUMMARY

Date	Event
Sep 13, 1982	Purchased hacksaw blades
Sep 15, 1982	Test hardness of all blades
Sep 16, 1982	1st exposure, 2nd group PK party no. 30
Oct 5, 1982	Test hardness of 2nd group
Oct 6, 1982	2nd expsoure, 2nd group PK party no. 31
Oct 11, 1982	Test hardness of control blade
Oct 28, 1982	Test hardness of 2nd group
Nov 1, 1982	3rd exposure, 2nd group PK party no. 34
Nov 2, 1982	Test hardness of 2nd group
Nov 9, 1982	Test hardness of control blade
Nov 10, 1982	Test hardness of 2nd group
Nov 10, 1982	4th exposure, 2nd group PK party no. 35
Nov 18, 1982	Test hardness of control blade
Nov 19, 1982	Test hardness of 2nd group

Group No. 1 - Nonexposed (one blade) group
Group No. 2 - Exposed (three blades) group

Table 2A: Control Sample "C" (Nonexposed)

HARDNESS DATA USING ROCKWELL SUPERFICIAL 15N SCALE

Test Date	Control Sample			Average of 6 Readings	Conversion to Tensile Strength in psi(3)
9-15-82	82	75	77	~79.0 →	167,000
	82	79.5	79		
10-11-82	79	79	79.5	~79.1 →	167,000
	79	79.5	79		
11-09-82	79	79	80	~79.1 →	167,000
	79.5	78	79		
11-18-82	82	78	79	~79.1 →	167,000
	78	79	78.5		

Hardness numbers are displayed according to the following pattern corresponding to the test points shown in Figure 1:

1	2	3
4	5	6

(3) Reference

Table 2B: Test Sample No. 1 (0) Exposed

HARDNESS DATA USING ROCKWELL SUPERFICIAL 15N SCALE

Test Date	Test Sample No.1			Average Value of 6 Readings	Conversion to Tensile Strength in psi (3)
9-15-82 Before Exposure	75	78	75	76.0 →	142,000
	76	77	75		
10-05-82	74	76	75	74.0 →	130,000
	72	73	74		
10-28-82	73.5	75	71	73.0 →	124,000
	73.5	73	72		
11-02-82	72	73.5	72	71.5 →	119,000
	70	73	69		
11-10-82	73	73	72	71.1 →	115,500
	68	69	72		
11-19-82	72	72	71	69.3 →	106,000
	67	69	65		

Hardness numbers are displayed according to the following pattern corresponding to the test points shown in Figure 1:

1	2	3
4	5	6

(3) Reference

Table 2C: Test Sample No. 2(△) Exposed

HARDNESS DATA USING ROCKWELL SUPERFICIAL 15N SCALE

Test Date	Test Sample No. 2			Average Value of 6 Readings	Conversion to Tensile Strength in psi(3)
9-15-82 Before Exposure	76	75	77	76.0 →	142,000
	75	76	77		
10-05-82	74	75	73	74.0 →	130,000
	73	74	75		
10-28-82	70	74	73	71.8 →	118.500
	71	73	72		
11-02-82	71	75	70	71.3 →	118.200
	72	70	70		
11-10-82	71	73	71	70.1 →	111,000
	66	71	69		
11-19-82	72	71	72	69.6 →	107,000
	64	70	69		

Hardness numbers are displayed according to the following pattern corresponding to the test points shown in Figure 1:

1	2	3
4	5	6

(3) Reference

Table 2D: Test Sample No. 3 (□) Exposed

HARDNESS DATA USING ROCKWELL SUPERFICIAL 15N SCALE

Test Date	Test Sample No. 3			Average Value of 6 Readings	Conversion to Tensile Strength in psi (3)
9-15-82 Before Exposure	79.5	79	80	78.9 →	166,000
	79	78	78		
10-05-82	78.5	78	76	76.2 →	148,000
	76	77	72		
10-28-82	77	75	77	73.6 →	127,000
	70	71	72		
11-02-82	71.5	76	72	71.6 →	118,000
	68	71.5	71		
11-10-82	77	72	75	71.1 →	115,000
	67.5	67.5	68		
11-19-82	73	72	71	70.5 →	112,000
	67	70	70		

Hardness numbers are displayed according to the following pattern corresponding to the test points shown in Figure 1:

1	2	3
4	5	6

(3) Reference

In Figure 2 the test data are averaged to eliminate the test-to-test variations and the Rockwell scale readings converted to tensile strength expressed in pounds per square inch (Reference 3). The average of measurements taken on the control sample and each of the test samples is displayed over the duration of the experiment. The event summary presented in Table 1 is superposed on Figure 2 to provide a reference for the measurements.

Subsequent to the first RAR exposure, large strength reduction of 18,000 psi occurred in Sample 3. The average reduction in tensile strength following each RAR varied between 10,000 and 18,000 psi. Over the duration of the experiment (four RAR exposures) the tensile strength of Sample 3 was recuced by 50,000 psi while the other two samples experienced a 35,000 psi reduction.

CONCLUSIONS

Annealing definitely occurred in the three hacksaw blades that were exposed to RAR during four PK parties. The hardness of the high carbon steel blades was reduced, as demonstrated by a reduction in tensile strength, between 35,000 and 50,000 psi for each of the exposed blades. The control blade did not vary from its original hardness level during the same time period of this experiment. The final hardness level of the exposed blades was nearly down to the top of the hardness range for annealed steel. This range is also shown on Figure 2.

If the results of this experiment were to be duplicated using conventional methods, the hacksaw blades would have to be placed in an annealing furnace for approximately one hour at a temperature between 1450 and 1525 deg. F. Then they would be slowly cooled down to 1200 deg. F (50 deg./hr.). After reaching 1200 deg. F, then the blades could be cooled in air down to room temperature. This annealing procedure typically requires eight to ten hours (Reference 4).

Much experimentation remains because there are many unknown factors in how RAR works. Many complex human parameters, such as mental attitudes,

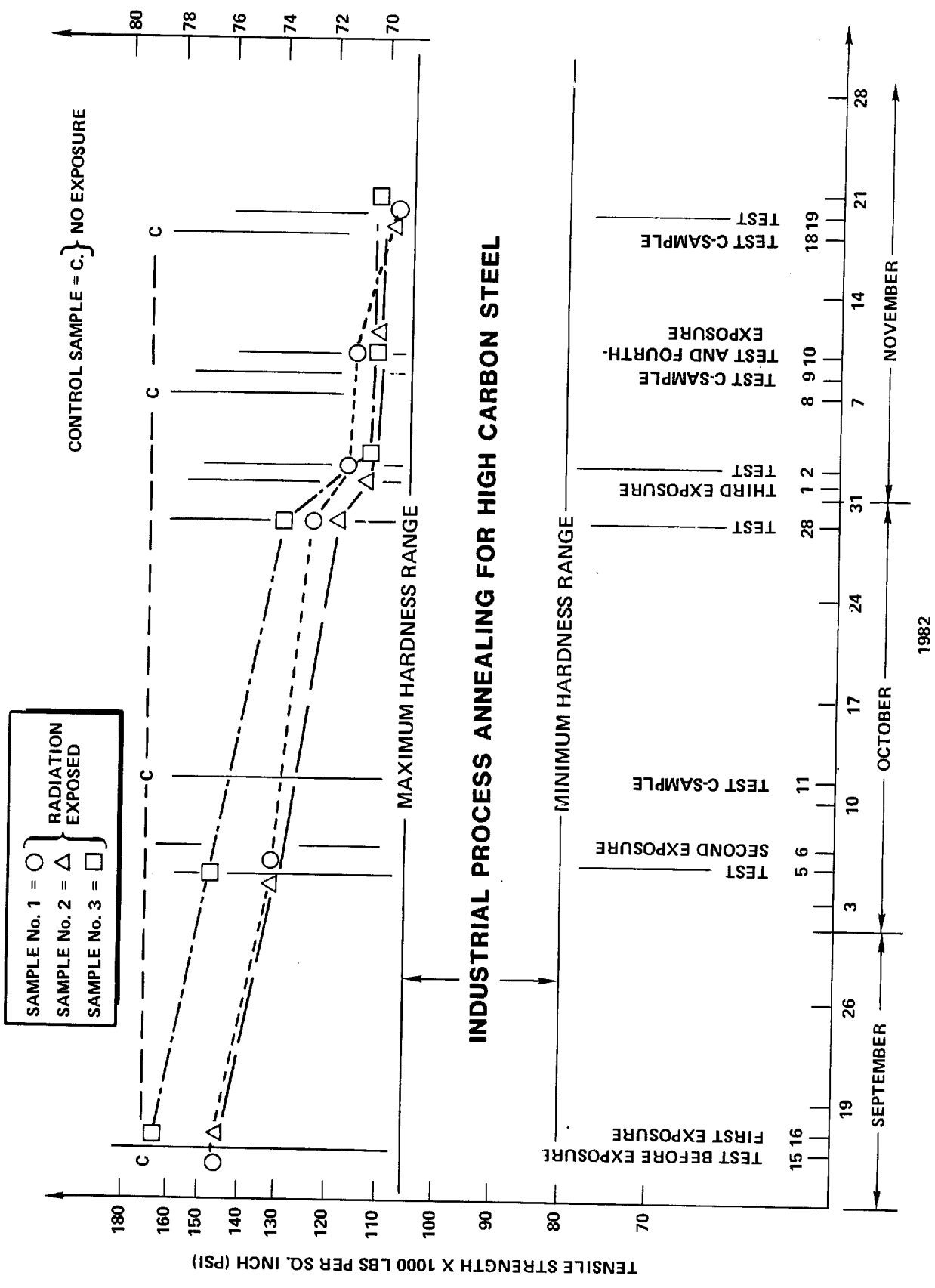

FIGURE 2. STRENGTH REDUCTION BY REMOTE ANNEALING RADIATION (RAR) FOR HIGH CARBON STEEL HACKSAW BLADES

desires, personalities, and level of emotional intensity, are involved in this type of experimentation. However, it is becoming clear that the human mind can have a dramatic effect on material things as demonstrated in this experiment. This experiment is easily replicated by anyone with access to hardness testing equipment and PK parties. Any data obtained from similar experimentation would be greatly appreciated.

REFERENCES

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3. J.H. Westbrook and H. Conrad (Eds.), "The Science of Hardness Testing and Its Research Applications," American Society for Metals, 1973

4. ASM Metals Handbook--9th Ed., 1981, Volume 4, Table 2, page 17