**Results**

Before beginning the experiment, measurements were made of the two types of test specimens that were to be used for Izod and Sharpe impact testing. Once these values were found, the error offsets of both the Izod and Sharpe impact testers were found by running engaging each of them with no specimens integrated in the machines’ test area and subsequently recording the difference in energy when the each machines’ hammer swung back to its original position. With these offsets in mind, the test procedure laid out in the Procedure was run, and the energy lost in impacting the Hot, Cold, and Room Temperature versions of each test specimen was found. All of these results have been summarized in Tables 4-1 through 4-3 below.

**Table 4-1. Test Specimen Dimensions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Specimen** | **Length (ft)** | **Width (ft)** | **Height (ft)** |
| Sharpe | 0.182 | 0.035 | 0.035 |
| Izod | 0.243 | 0.035 | 0.0-35 |

**Table 4-2. Impact Testing Machine Offsets**

|  |  |
| --- | --- |
| **Test Specimen** | **Energy Offset (ft•lbf)** |
| Sharpe | 3.25 |
| Izod | -5.5 |

**Table 4-3. Energy Absorption for Izod and Sharpe Impact Testing**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Specimen** | **Material** | **Temperature** | **Energy Loss (ft•lbf)** |
| **Izod** | Aluminum | Cold | 12 |
| Room Temperature | 9.5 |
| Hot | 12.5 |
| Steel | Cold | 4 |
| Room Temperature | 65.5 |
| Hot | 63.5 |
| **Sharpe** | Aluminum | Cold | 15.5 |
| Room Temperature | 13.75 |
| Hot | 10.75 |
| Steel | Cold | 3.25 |
| Room Temperature | 25.5 |
| Hot | 26.625 |

**Discussion of Results**

With these values in mind, it was possible to calculate the work per unit volume associated with each impact test trial. This was accomplished by simply dividing the Energy Loss of each trial by the volume of the test specimen associated with it. The results of this process are listed in Table 5-1.

**Table 5-1. Work Per Unit Volume for Each Impact Test Trial**

|  |  |  |  |
| --- | --- | --- | --- |
| **Test Specimen** | **Material** | **Temperature** | **Work Per Unit Volume (lbf/ft2)** |
| **Izod** | Aluminum | Cold | 40945 |
| Room Temperature | 32415 |
| Hot | 42651 |
| Steel | Cold | 13648 |
| Room Temperature | 220080 |
| Hot | 216668 |
| **Sharpe** | Aluminum | Cold | 70517 |
| Room Temperature | 62555 |
| Hot | 48907 |
| Steel | Cold | 14786 |
| Room Temperature | 116011 |
| Hot | 121129 |