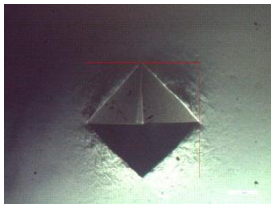
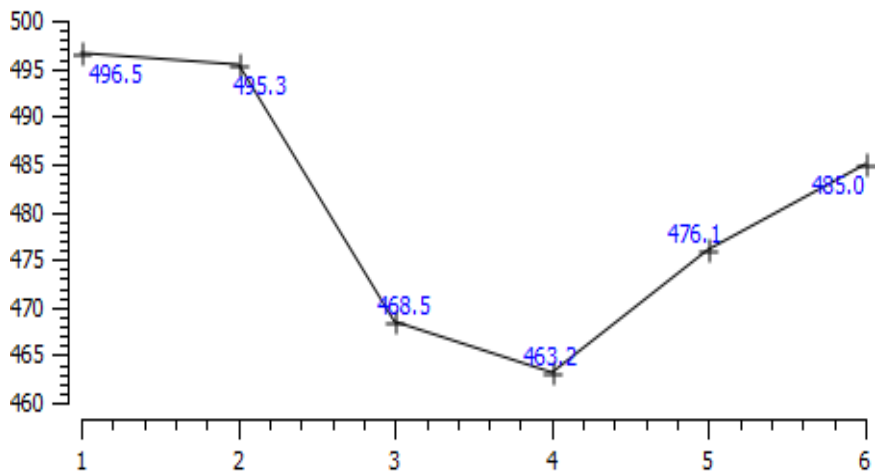


# Micro/Vickers Hardness (HV) Test Results

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  |                 |       |    |       |       |       |         |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------|----------------|-------|------------------|-----------------|-------|----|-------|-------|-------|---------|
| Submitter                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       | Date Submitted |       |                  |                 |       |    |       |       |       |         |
| Part Name                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | W1091   |       | Part #         |       | 19 308 B         |                 |       |    |       |       |       |         |
| # of Samples                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       | Sample Descri. |       |                  |                 |       |    |       |       |       |         |
| Qual. UL                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 510,0   |       | Qual. LL       |       | 400,0            |                 |       |    |       |       |       |         |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  |                 |       |    |       |       |       |         |
| Machine ID                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | HV-30MP |       | Meas. Standard |       | PN-EN ISO 6507-1 |                 |       |    |       |       |       |         |
| Sample Cyl. /Sph. Diam. (mm) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       | Force (g)      |       | 10 000           |                 |       |    |       |       |       |         |
|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  |                 |       |    |       |       |       |         |
| Test Results                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  |                 |       |    |       |       |       |         |
| #                            | Depth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Y       | D1    | D2             | Hard. | Conver.          | #               | Depth | Y  | D1    | D2    | Hard. | Conver. |
|                              | μm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | μm      | μm    | μm             | HV    | HV               |                 | μm    | μm | μm    | μm    | HV    | HV      |
| 1                            | 1.1.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         | 192,6 | 194,0          | 496,5 | 496,5            | 5               | 1.3.1 |    | 195,8 | 199,0 | 476,1 | 476,1   |
| 2                            | 1.1.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         | 192,1 | 194,9          | 495,3 | 495,3            | 6               | 1.3.2 |    | 194,4 | 196,7 | 485,0 | 485,0   |
| 3                            | 1.2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         | 198,5 | 199,4          | 468,5 | 468,5            |                 |       |    |       |       |       |         |
| 4                            | 1.2.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         | 199,4 | 200,8          | 463,2 | 463,2            |                 |       |    |       |       |       |         |
| Case Hardness (HV)           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  | Case Depth (μm) |       |    |       |       |       |         |
| Indent Images                | <div>1. </div> <div>2. </div> <div>3. </div> <div>4. </div> <div>5. </div> <div>6. </div> |         |       |                |       |                  |                 |       |    |       |       |       |         |
|                              | <div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  |                 |       |    |       |       |       |         |
| Hard. Curve                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |         |       |                |       |                  |                 |       |    |       |       |       |         |
|                              | Statistics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |       |                |       |                  |                 |       |    |       |       |       |         |
| Maximum                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 496,5   |       |                |       | Minimum          |                 | 463,2 |    |       |       |       |         |

|         |       |           |      |
|---------|-------|-----------|------|
| Average | 480,8 | Std. Dev. | 5,2  |
| Cp      | 3,55  | Cpk       | 1,89 |

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