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|-----------------|--------------|
| Item ID: | LA-3322-27.2 |
| Revision Level: | |
| Revision Date: | |

| | |
|--------|-----------------------------------------|
| Title: | Material Specificaiton for LA-3322-27.2 |
|--------|-----------------------------------------|

| Chemical Compositon Requirements (By weight percent) | | | |
|---------------------------------------------------------|---------|---------|--------|
| Element | Minimum | Maximum | Target |
| Aluminum | - | - | - |
| Boron | - | - | - |
| Carbon | 3.90% | 4.20% | 4.05% |
| Chromium | - | 0.50% | 0.25% |
| Cobalt | 11.00% | 13.00% | 12.00% |
| Free Carbon | - | - | - |
| Iron | - | 2.00% | 1.00% |
| Manganese | - | - | - |
| Molybdenum | - | - | - |
| Nickel | - | 0.50% | 0.25% |
| Oxygen | - | - | - |
| Silicon | - | - | - |
| Sulfur | - | - | - |
| Tungsten | 85.10% | - | 85.10% |
| Vanadium | - | - | - |

| Rotap Sizing Requirements (Weight Percent Per ASTM B214) | | | | |
|-------------------------------------------------------------|---|----------|--------|-------|
| U.S. Mesh | | | Min. | Max. |
| Passing Sieve X Retained | | | | |
| | | 140 Mesh | - | - |
| 140 Mesh | X | 170 Mesh | - | - |
| 170 Mesh | X | 200 Mesh | - | 0.00% |
| 200 Mesh | X | 230 Mesh | - | 0.00% |
| 230 Mesh | X | 270 Mesh | - | 1.00% |
| 270 Mesh | X | 325 Mesh | - | 8.00% |
| 325 Mesh | X | D | 91.00% | - |

| Sub-Sieve Sizing Requirements (Volume Percent Per ASTM B822) | | |
|-----------------------------------------------------------------|-------|--------|
| Micron Channel | Min | Max |
| -20 μ | 3.00% | 16.00% |
| -15 μ | - | 9.00% |
| -10 μ | - | 5.00% |
| -5 μ | - | 2.00% |
| - | - | - |
| - | - | - |
| - | - | - |

| Physical Properties Requirements | | |
|----------------------------------|---------|---------|
| Testing Procedure | Minimum | Maximum |
| Hall Flow (per ASTM B213) | - | - |
| Apparent Density (per ASTM B212) | 5.8 | 7 |
| Mean Value (per ASTM B222) | 31 | 41 |
| D10 (per ASTM B222) | - | - |
| D50 (per ASTM B222) | - | - |
| D90 (per ASTM B222) | - | - |

Quality Manager:

Operations Manager:

General Manager: