

HAYNES[®] HR-160[®] alloy

Oxidation Resistance

Oxidation in Air

Laboratory tests were conducted in flowing air at 1800 to 2200°F (982 to 1204°C) for 1008 hours, with specimens cycled to room temperature once every 168 hours.

| Alloy | 1800°F (982°C) | | | | 2000°F (1093°C) | | | | 2100°F (1149°C) | | | | 2200°F (1204°C) | | | |
|---------------------------|----------------|-----------|------------------------|------------|-----------------|-----------|------------------------|------------|-----------------|-----------|------------------------|------------|-----------------|-----------|------------------------|------------|
| | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | |
| | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm |
| HR-160[®] | 0.7 | 18 | 5.5 | 140 | 1.7 | 43 | 10.3 | 262 | 2.5 | 64 | 16.0 | 406 | 3.6 | 91 | 22.0 | 559 |
| 800HT | 0.0 | 0 | 4.1 | 104 | 7.6 | 193 | 11.6 | 295 | 11.0 | 279 | 15.0 | 381 | 19.4 | 493 | >58 | >1473 |
| 253MA | 1.3 | 33 | 3.0 | 76 | 0.7 | 18 | 8.2 | 208 | 8.7 | 221 | 16.5 | 419 | 18.6 | 472 | 29.2 | 742 |
| RA85H | 0.5 | 13 | 8.2 | 208 | 2.9 | 74 | 25.9 | 658 | 3.7 | 94 | >59 | >1499 | 3.9 | 99 | >59 | >1499 |

Long-Term Oxidation in Air

Laboratory tests were conducted at 2000°F (1093°C) in still air (box furnace), with specimens being cycled to room temperature once every 30 days.

| Alloy | 1800°F (982°C) | | | | 2000°F (1093°C) | | | | 2100°F (1149°C) | | | | 2200°F (1204°C) | | | |
|---------------------------|----------------|-----------|------------------------|------------|-----------------|-----------|------------------------|------------|-----------------|------------|------------------------|-------------|-----------------|-------------|------------------------|------------|
| | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | |
| | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm |
| HR-160[®] | 2.5 | 64 | 16.7 | 424 | 3.6 | 91 | 29.0 | 737 | 7.6 | 193 | 58.7 | 1491 | 16.7 | 4204 | 26.3 | 668 |
| 601 | 0.5 | 13 | 22.4 | 569 | 5.4 | 137 | 45.1 | 1146 | 12.6 | 320 | 72.8 | 1849 | 27.3 | 693 | 38.9 | 988 |
| RA85H | 6.3 | 160 | 53.7 | 1364 | 17.9 | 455 | 80.3 | 2040 | 20.0 | 508 | 94.8 | 2408 | >251.7 | >6393 | >251.7 | >6393 |
| 800HT | 20.7 | 526 | 79.8 | 2027 | 44.3 | 1125 | 51.0 | 1295 | 65.2 | 1656 | 70.3 | 1786 | >249.9 | >6373 | >249.9 | >6373 |

Plate exposed for 360 days (8,640 hours) in still air, except for 1800°F test, which was exposed for 720 days (17,280 hours). Cycled once per month.

| Alloy | 1800°F (982°C) | | | | 2000°F (1093°C) | | | | 2100°F (1149°C) | | | | 2200°F (1204°C) | | | |
|---------------------------|----------------|-----------|------------------------|------------|-----------------|-----------|------------------------|------------|-----------------|------------|------------------------|-------------|-----------------|------------|------------------------|-----------------|
| | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | | Metal Loss | | Average Metal Affected | |
| | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm | mils | µm |
| HR-160[®] | 1.2 | 30 | 12.0 | 305 | 2.7 | 69 | 27.9 | 709 | 5.3 | 135 | 44.6 | 1133 | 8.9 | 226 | >250.0 | >6350 |
| 601 | 0.0 | 0 | 2.6 | 66 | 3.4 | 86 | 10.5 | 267 | 5.3 | 135 | 14.6 | 371 | 10.3 | 262 | 23.9 | 607 |
| RA85H | 0.7 | 18 | 14.6 | 371 | 8.9 | 226 | 14.3 | 363 | 6.4 | 163 | >250.0 | >6350 | 8.4 | 213 | >250.0 | >6350 |
| 800HT | 4.6 | 117 | 14.1 | 358 | 22.2 | 564 | 27.9 | 709 | 43.9 | 1115 | 48.9 | 1242 | 65.6 | 1666 | >250.0 | >6350 |

Plate exposed for 360 days (8,640 hours) in still air. Cycled once every two months.