

**TABLE VII - HARDENABLE STAINLESS STEELS** Typical Chemical Range Percentages

| Trade Name<br>(AISI Equivalent) | C           | Mn          | Si          | P    | S          | Ni           | Cr             | Mo           | Cu           | Other                               |
|---------------------------------|-------------|-------------|-------------|------|------------|--------------|----------------|--------------|--------------|-------------------------------------|
| CA-15 (410)                     | .05<br>.15  | 1.00        | 1.50        | .04  | .04        | 1.00         | 11.5<br>14.0   | .50          | ---          |                                     |
| IC 416 (416)                    | .15         | 1.25        | 1.50        | .05  | .15<br>.35 | .50          | 11.50<br>14.0  | .50          | .50          | .10-.30Se alternate<br>for S, .50Zr |
| CA-40 (420)                     | .20<br>.40  | 1.00        | 1.50        | .04  | .04        | 1.0          | 11.5<br>14.0   | .5           | ---          |                                     |
| IC 431 (431)                    | .08<br>.15  | 1.00        | 1.00        | .04  | .04        | 1.50<br>2.20 | 15.0<br>17.0   | ---          | ---          | 0.22 C + N; .03-.12N*               |
| IC 440A (440A)                  | .60<br>.75  | 1.00        | 1.00        | .04  | .03        | ---          | 16.0<br>18.0   | .75          | ---          |                                     |
| IC 440C (440C)                  | .95<br>1.20 | 1.00        | 1.00        | .04  | .03        | .75          | 16.0<br>18.0   | .35<br>.75   | ---          |                                     |
| IC 440F (440F)                  | .95<br>1.2  | 1.00        | 1.00        | .04  | .15<br>.35 | .50          | 16.0<br>18.0   | .75          | .50          | .10-.30Se alternate<br>for S        |
| Greek Ascology                  | .15<br>.20  | 1.00        | 1.00        | .04  | .03        | 1.80<br>2.20 | 12.00<br>14.00 | .50          | .50          | 2.50-3.5W                           |
| IC 17-4                         | .06         | .70         | .50<br>1.00 | .04  | .03        | 3.60<br>4.60 | 15.50<br>16.70 | ---          | 2.80<br>3.50 | .15-.40 Cb + Ta, .05N               |
| AM-355                          | .08<br>.15  | .40<br>1.10 | .75         | .04  | .03        | 3.50<br>4.50 | 14.50<br>15.50 | 2.00<br>2.60 |              | .05-.13N; .15-.25C + N              |
| CA-6NM                          | .06         | 1.00        | 1.00        | .04  | .03        | 3.5<br>4.5   | 11.5<br>14.0   | .40<br>1.0   | ---          |                                     |
| IC 15-5                         | .05         | .60         | .50<br>1.00 | .025 | .025       | 4.20<br>5.00 | 14.00<br>15.50 | ---          | 2.50<br>3.20 | .15-.30 Cb + Ta, .05N               |
| CD-4MCu                         | .04         | 1.00        | 1.00        | .04  | .04        | 4.75<br>6.00 | 24.5<br>26.5   | 1.75<br>2.25 | 2.75<br>3.25 |                                     |

\* Nitrogen analysis is not routinely measured for commercial castings. To assure hardenability, nitrogen must be in range and its analysis should be requested by the purchaser.

**TABLE VIII - PROPERTIES OF SEPARATELY CAST TEST BARS OF HARDENABLE, STAINLESS STEELS**

| Alloy          | Condition | Tensile Strength |            | 0.2% Yield Strength |            | % Elongation<br>Range<br>(in 2.5 cm) | Hardness<br>Range or<br>Max |
|----------------|-----------|------------------|------------|---------------------|------------|--------------------------------------|-----------------------------|
|                |           | English psi      | Metric MPa | English psi         | Metric MPa |                                      |                             |
| CA-15          | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 100 Rb                      |
|                | Hardened  | 95-200,000       | 655-1394   | 75-160,000          | 517-1103   | 5-12                                 | 94 Rb-45 Rc                 |
| IC 416         | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 100 Rb                      |
|                | Hardened  | 95-200,000       | 655-1394   | 75-160,000          | 517-1103   | 3-8                                  | 94 Rb-45 Rc                 |
| CA-40          | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 25 Rc                       |
|                | Hardened  | 200-225,000      | 1394-1551  | 130-210,000         | 896-1448   | 0-5                                  | 30-52 Rc                    |
| IC 431         | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 30 Rc                       |
|                | Hardened  | 110-160,000      | 759-1103   | 75-105,000          | 517-724    | 5-20                                 | 20-40 Rc                    |
| IC 440A        | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 30 Rc                       |
|                | Hardened  | ---              | ---        | ---                 | ---        | ---                                  | 35-56 Rc                    |
| IC 440C        | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 35 Rc                       |
|                | Hardened  | ---              | ---        | ---                 | ---        | ---                                  | 40-60 Rc                    |
| IC 440F        | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 35 Rc                       |
|                | Hardened  | ---              | ---        | ---                 | ---        | ---                                  | 40-60 Rc                    |
| Greek Ascology | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 36 Rc                       |
| IC 17-4        | Annealed  | ---              | ---        | ---                 | ---        | ---                                  | 36 Rc                       |
|                | Hardened  | 150-190,000      | 1034-1310  | 140-160,000         | 965-1103   | 6-20                                 | 34-44 Rc                    |
| AM-355         | Hardened  | 200-220,000      | 1394-1517  | 150-165,000         | 1034-1138  | 6-12                                 | ---                         |
| IC 15-5        | Hardened  | 135-170,000      | 931-1172   | 110-145,000         | 759-1000   | 5-15                                 | 26-38 Rc                    |
| CD-4MCu        | Annealed  | 100-115,000      | 690-793    | 75-85,000           | 517-586    | 20-30                                | 94-100 Rb                   |
|                | Hardened* | 135-145,000      | 931-1000   | 100-120,000         | 690-827    | 10-25                                | 28-32 Rc                    |

NOTE: The above mechanical property values are for information only. They do not necessarily apply to casting.

Any requirements for mechanical properties are beyond this standard and must be negotiated with the foundry.

\* Not generally sold in hardened condition.