

COLUMBUS STAINLESS SPECIFICATION

Document No: **TCS-EDP-004**

Implementation Date: **20 August 2020**

Revision: **0**

I. SCOPE

This publication covers the chemical and mechanical limits for Columbus Stainless grades.

II. VALIDITY

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III. ENQUIRIES

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IV. DISCLAIMER

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1. CHEMICAL COMPOSITION

| Grade | C | S | P | Mn | Si | Cr | Ni | Ti | Mo | N | Cu |
|----------|-------|-------|-------|-----------|------|-------------|-------------|---------------|------|-------|-------------|
| 3CR12 | 0.030 | 0.015 | 0.040 | 1.50 | 1.00 | 10.5 - 12.5 | 0.30 - 1.50 | 4x(C+N) - 0.6 | - | 0.030 | - |
| 3CR12L | 0.030 | 0.015 | 0.040 | 1.50 | 1.00 | 10.5 - 13.5 | 0.30 - 1.00 | - | - | 0.030 | - |
| 3CR12HP | 0.030 | 0.015 | 0.040 | 1.50 | 1.00 | 10.5 - 13.5 | 0.30 - 1.00 | - | - | 0.030 | - |
| 3CR12TG | 0.12 | 0.030 | 0.040 | 1.00 | 1.60 | 10.5 - 18.0 | 1.00 | 1.00 | - | 0.10 | - |
| CS430DDQ | 0.08 | 0.015 | 0.040 | 1.00 | 1.00 | 16.0 - 17.5 | 0.40 | - | - | 0.065 | - |
| CS20211 | 0.075 | 0.010 | 0.045 | 7.0 - 9.0 | 0.60 | 16.0 - 17.0 | 4.00 - 5.00 | - | 0.56 | 0.15 | 1.50 - 2.10 |
| CS304DDQ | 0.08 | 0.030 | 0.045 | 2.00 | 1.00 | 18.0 - 19.0 | 8.5 - 10.5 | - | - | 0.10 | 0.75 |

Notes

1. Compositions are maximum values, unless otherwise stated.

2. MECHANICAL PROPERTIES

| Grade | Gauge [mm] | Rm [MPa] | Rp0.2% [MPa] | A50 [%] | HRB [HRBW] | Bend | Grain Size |
|------------|--------------|----------|--------------|---------|------------|------|------------|
| 3CR12 | 0 - 2.99 | 460 | 280 | 18 | 95 | PASS | |
| | 3.00 - 50.00 | | 300 | | | | |
| 3CR12L | 0 - 2.99 | 460 | 280 | 18 | 95 | PASS | |
| | 3.00 - 50.00 | | 300 | | | | |
| 3CR12HP400 | 3.00 - 5.50 | 460 | 400 | 16 | 95 | PASS | |
| 3CR12TG | 0-2.00 | 380 | 170 - 500 | 10 | - | - | - |
| | 2.01 - 2.50 | 414 | 170 - 450 | | | | |
| CS430DDQ | 0 - 15.00 | 450 | 205 | 26 | 88 | | 7.0 - 8.5 |
| CS20211 | 0 - 75.00 | 515 | 205 | 40 | 100 | | - |
| CS304DDQ | 0 - 75.00 | 515 | 165 | 40 | - | | - |

Notes

1. Limits are minimum values, unless otherwise stated. Summary of Changes

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3. SUMMARY OF CHANGES

| Revision | Paragraph | Detail of Change |
|----------|-----------|--|
| 0 | 1 | Split out from TCS-IDP-001 Changes to correspond with ASTM and EN limits for multiple certification: - 3CR12: Mn, N - 3CR12L & 3CR12HP: Cr, N |

4. DOCUMENT APPROVAL

| | Job Title | Co No | Date | Signature |
|--------------------|---------------------------------------|-------|------|-----------|
| Prepared by | Technical Customers Services Engineer | 5736 | | |
| Verified by | Manager: Technical Customers Services | 1885 | | |
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