

## CRTe™ Low-Marking Package

Volant offers a low-marking package for the CRTe™ casing running tool that virtually eliminates die marking on corrosion resistant tubulars, promoting long term integrity of completions in corrosive environments. The package provides an improved radial load distribution across die/casing interaction surface, reducing die penetration depths to a fraction of API 5CRA (5CRA) and industry standards while maintaining gripping capabilities. This is achieved while using corrosion resistant materials in the dies that are compatible with materials in group 1 and 2 of 5CRA up to L80 grade materials. Low-marking packages are available for the full range of casing sizes and weights of the CRTe tool.

### Specification Summary

#### Marking Performance

|                                  |         | Hoist                    | Makeup                     | Breakout                       |
|----------------------------------|---------|--------------------------|----------------------------|--------------------------------|
| Loading                          |         | 300,000 lb<br>136,080 kg | 30,000 ft.lb<br>40,600 N.m | 27,000 ft.lb<br>36,600 N.m     |
| Standard Dies Average Marking    | in (mm) | 0.0130 (0.30)            | 0.0210 (0.50) <sup>1</sup> | 0.006 (0.15) <sup>1</sup>      |
| Low-Marking Dies Average Marking | in (mm) | 0.0015 (0.04)            | 0.0018 (0.05)              | 0.0010 (0.03)                  |
| Notes                            |         | Comparable field loading | Extreme Makeup             | Highest slip risk <sup>2</sup> |

#### CRA Material Elements in Groups 1 and 2 of API 5CRA<sup>3</sup>

| Category            | Group | Structure                      | C               | Cr              | Ni              | Mo              | N               |
|---------------------|-------|--------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                     |       |                                | % mass fraction |
| 13-5-2              | 1     | Martensitic                    | 0.02            | 13              | 5               | 2               | 0               |
| 13-1-0              | 1     | Martensitic Ferritic           | 0.03            | 13              | 0.5             | 0               | 0.01            |
| 22-5-3 <sup>4</sup> | 2     | Duplex Austenitic/<br>Ferritic | 0.02            | 22              | 5               | 3               | 0.18            |
| 25-7-3 <sup>4</sup> | 2     | Duplex Austenitic/<br>Ferritic | 0.02            | 25              | 1               | 3               | 0.18            |
| 25-7-4 <sup>4</sup> | 2     | Duplex Austenitic/<br>Ferritic | 0.02            | 25              | 1               | 3.8             | 0.27            |
| 26-6-3 <sup>4</sup> | 2     | Duplex Austenitic/<br>Ferritic | 0.04            | 25.5            | 4.75            | 2.5             | 1.17            |

1. Values are estimates.
2. No slipping was observed during tests.
3. Typical chemistry analysis from Table A.2 of API 5CRA shown.
4. Testing validation is not yet complete for this category.



**Give us a problem. Or just drop us a line if you want to know more.**

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