

MIL-SPEC TEST REQUIREMENTS

Any specifications for **MIL-SPEC** hardware (such as **AN**, **MS** and **NAS** parts) includes the tests that parts are required to pass to qualify as **MIL-SPEC** parts.

As a service to its valued customers, **WCL** offers the following as a general guide to test and certification requirements for the **MIL-SPEC** hardware items it sells.

FLAT WASHERS

MIL-SPEC designations for flat washers include, but are not limited to, **AN960**, **MS15795**, **MS27183**, **NAS620**, and **NAS1252**. These are covered by military procurement specification **FF-W-92** which has, as minimum requirements.

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|---|---|
| 1. Chemical analysis | 3. Workmanship |
| 2. Process certification on protective finish | 4. Magnetic permeability (stainless steel only) |

HELICAL SPRING LOCKWASHERS

MIL-SPEC designations include, but are not limited to, **MS35338**, **MS35340**, **MS51848**, **NAS1640** and **NAS1676**. These are covered by military procurement specification **ASME B18.21.1** or **FF-W-84** which has some, or all, of the following.

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| 1. Interlinking test | 6. Chemical analysis (mill certification acceptable) |
| 2. Free height test | 7. Magnetic permeability (on stainless steel) |
| 3. Twist test | 8. Process certification on protective finish |
| 4. Pressure test | 9. Decarb test (on carbon steel) |
| 5. Hardness test | 10. Embrittlement test (electro plated) |

SPRING WASHERS - CURVED, WAVE AND BELLEVILLE

MIL-SPEC designations for spring washers include but are not limited to, **M12133/1** and **M12133/2** and are covered by military specification **MIL-W-12133** which has, as minimum requirements:

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| 1. Chemical analysis | 5. Decarburization (carbon steel only) |
| 2. Process certification on protective coating and surface treatment | 6. Load Deflection |
| 3. Inspection for cracks | 7. Permanent set |
| 4. Hardness test | 8. Repeated loading |

TOOTH LOCKWASHERS

MIL-SPEC designations for tooth lockwashers include, but are not limited to **MS35333**, **MS35335**, **MS35336**, **MS35790** and **MS45904**. These are covered by military procurement specification **ASME B18.21.1** or **FF-W-100** which has some or all of the following.

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| 1. Hardness test | 5. Spread test |
| 2. Process certification on protective finish | 6. Twist test |
| 3. Chemical analysis | 7. Temper test |
| 4. Compression and flattening test | 8. Decarb test (on carbon steel) |
| | 9. Embrittlement test (electro plated) |

The above list provides a guide relating to the most popular types of MIL-SPEC washers. It should not be construed as a complete list of all military specifications and documents pertaining to washers or as a list of all tests or analysis that may be required.

Many OEM's also have special requirements (including testing) that must be met to be in compliance with their part specifications and purchase requirements.

Review all relevant documents carefully before requesting quotations to avoid unexpected costs for testing and analysis. When in doubt, discuss the requirements with your WCL sales associates.

Remember, if it has not been properly tested, it is not MIL-SPEC hardware.