

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

STEEL, COIL AND LEAF SPRINGS

WSS-M1A271-B

1. SCOPE

The materials described by this specification are alloy spring steels.

2. APPLICATION

These materials were released originally for use in the manufacture of suspension springs. Coils and individual leaves may be specified on the drawings as either uniform thickness of section or as varying thickness of section.

3. REQUIREMENTS

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 SYSTEMS APPROVAL

The materials described by this specification shall be subject to a source "Systems Approval," i.e. both the component supplier and steel supplier shall be approved in tandem.

3.3 GENERAL REQUIREMENTS

Coil springs shall be made from ground bar, or bar from which the decarburized layer has been removed.

3.4 REQUIREMENTS FOR FINISHED SPRINGS

3.4.1 General Restrictions

3.4.1.1 The component drawing may specify a restricted list of steel types together with other requirements such as hardness, surface condition, peening control, etc., which have been applied to springs that have successfully met the rig and durability requirements.

3.4.1.2 No steel other than those proved to be acceptable by prototype testing may be used in production unless prior approval from Ford Product Development is obtained.

Date	Action	Revisions
2002 07 23	Revised	Updated and renumbered
1998 09 23	Activated	K. Thurgood (FAO)

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3.4.1.3 The component engineer must be supplied with the composition and properties of each batch of prototype springs.

3.4.2 Chemical Composition

This shall form part of the Control Plan. General information is shown in para 4.3.

3.4.3 Non-metallic Impurities

Inclusion Type:

	A		B		C		D	
	T	H	T	H	T	H	T	H
Silicon Steel	3.5	2	3	1.5	2.5	1.5	2	1.5
Non-silicon Steel	3.5	2	3	1.5	1.5	1	2	1.5

T = Thin Series

H = Heavy Series

There is no requirement on sulfide inclusions (Type A) when the sulfur content is 0.035 % or less.

The above requirement is either on billets to ASTM E 45 Method A or on finished springs to FLTM EU-BA 051-02.

Alternatively the Stahl-Eisen Prüfblatt 1570-71 method may be used: K4 value 20 maximum (oxides only). If the sulfur content is greater than 0.035 % the limits in the above table apply.

3.4.4 Grain Size

The steel shall have an austenitic grain size of 5 or finer.

3.4.5 Decarburization
(FLTM EU-BA 053-01)

The following limits of decarburization shall apply to the finished spring.

Coil Springs

Up to 13 mm diameter

Complete decarburization – Nil
Total decarburization - 0.15 mm
maximum