

1.0 DESCRIPTION

Steel - Alloy

2.0 APPLICATION

Small Carburized Parts

3.0 QUALIFYING SPECIFICATIONS

1E0024 Wrought Steel - General Requirements
1E0552 Test Specimens - Metallic Materials
1E2177 Mill Tolerances
1E2349A Material Application - Alternate
1E2349B Material Application - Alternate
1E2349C Material Application - Alternate
1E2700C Strand Cast Steel - Caster Class 1B

4.0 FORM

Semifinished for Forging
Hot Rolled Bars
Cold Finished Bars

5.0 COMPOSITION (%) (HEAT ANALYSIS)

Carbon 0.17 - 0.23
Manganese 0.60 - 0.95
Phosphorus 0.035 MAX
Sulfur 0.040 MAX
Silicon 0.15 - 0.35
Nickel 0.35 - 0.75
Chromium 0.35 - 0.65
Molybdenum 0.15 - 0.25
DI 39-68 mm

Note*: If DI is within specified range; Jominy data is not required to be submitted.

6.0 AUSTENITIC GRAIN SIZE

ASTM E112 (McQuaid-Ehn) grain size 5 or finer, grain refined with Aluminum.

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STEEL - ALLOY (8620H)

DATE
28 MAR 2007

CHG NO
04

NUMBER
1E2743

7.0 HARDENABILITY

Normalizing Temperature 925°C

Austenizing Temperature 925°C

Jominy Distance (mm)	1.5	5.0	9.0
MAX	48	---	35
RKW C			
MIN	41	32	---
Jominy Distance (Inch)	1/16	3/16	6/16
MAX	48	---	34
RKW C			
MIN	41	32	---

8.0 SUBSTITUTE MATERIALS

8.1 For purchased finished parts (not subsequently worked by Caterpillar Inc.), the following materials are approved substitutes (per 1E0024) for 1E2743, see Figure 1.

8.2 These materials may also be substituted for 1E2743 in Caterpillar worked parts when specified on the appropriate planning and purchasing documents. The 1E2349 system for approval of alternate materials is an acceptable method of documentation.

8.3 When procuring any of the following substitute grades for purchased finished parts or parts subsequently worked by Caterpillar, **the supplier must assure that all requirements per 1E0024 and 1E2700 are fulfilled. Material produced by the strand or continuous casting process must satisfy the caster class (1B) and reduction ratio (1E2700C) listed in the qualifying specifications of 1E2743.** Any additional requirements of 1E2743, such as grain size, hardenability, etc., must also be fulfilled.

Specification	Grade	Approval Type
Caterpillar	1E1120	1E2349A
ASTM A322	Grades 8620, 8720	1E2349B
ASTM A322	4620	1E2349C
ASTM A304	Grades 8620H, 8720H	1E2349B
ASTM A304	4620H	1E2349C
BS 970	Grades 805H20, and 805M20	1E2349B
DIN EN 10084	Grade 20MoCr4	1E2349B
JIS G4052	Grades SCM418H, SNCM220H, and SCM420H	1E2349B
NF EN 10084	Grade 20NCD2	1E2349B
GB/T 3077	Grade 20CrNiMo	1E2349B

Figure 1

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STEEL - ALLOY (8620H)	DATE 28 MAR 2007	CHG NO 04	NUMBER 1E2743

Note: Use of these substitute materials may require manufacturing processing changes due to differences in heat treat response.

9.0 SUBSIDIARY SPECIFICATIONS (FOR CATERPILLAR REFERENCE ONLY)

9.1 At the time of release of 1E2743, Change 04, the following subsidiary versions of 1E2743 were in use by Caterpillar Facilities outside of the United States:

Caterpillar France S.A. (Grenoble)	"H" Version
Caterpillar Belgium S.A. (Gosselies)	"H" Version
CMRSA (Albaret)	"H" Version
Caterpillar Brasil S.A.	"G" Version
Caterpillar Mitsubishi (Sagami)	"X" Version
Caterpillar Mitsubishi (Akashi)	"X" Version

Figure 2

9.2 Subsidiary versions may be changed, released, or cancelled without a change to this version of 1E2743. The Engineering Data System (EDS) provides information on the status of subsidiary version specifications and should be referenced for current information.

10.0 REFERENCE

Caterpillar Specifications	1E1120, 1E2349, 1E2700
ASTM	A304, A322, E112
BS	970
DIN	EN 10084
JIS	G4052
GB/T	3077

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