

EDS

Engineering,
GM DAEWOO Auto & Technology.
Standards

FERRITIC DUCTILE IRON CASTINGS FOR STEERING KNUCKLE

EDS-M-1908

ISSUED DATE: 1994. 07. 12

REVISED DATE: 2003. 02. 28

VERSION: 3

1. SCOPE

This standard specifies ferritic ductile Iron castings for steering knuckle used by *GM DAEWOO Auto & Technology Company(hereinafter referred to as the "GMDAT")*.

2. MANUFACTURING METHOD

2.1. The iron castings shall be manufactured by melting in a cupola, electric furnace and other suitable furnace and carrying out treatment to spheroidize graphite in ladle.

2.2. The iron castings may be subjected to annealing and other heat treatment to improve elongation and impact value.

3. TYPE AND USE

Table 1. Type and Use

Type	Use	Applications
FCD 400S	Iron castings requiring high toughness	Steering knuckle

4. QUALITY

4.1. Chemical composition

4.1.1. Main composition

Table 2. Main Chemical Composition

Unit : wt%

C	Si	Mn	P	S	Cr	Cu	Mg
3.4 ~ 3.7	2.1 ~ 2.3	0.3 ~ 0.6	0.05 max.	0.02 max.	0.05 max.	0.20 max.	0.04 min.

4.1.2. Permissible accompanying or trace elements : 0.2 max. of total contents.

Pb : 0.002 max.	Se : 0.03 max.	Sb : 0.002 max.	As : 0.02 max.
Bi : 0.001 max.	Ti : 0.05 max.	B : 0.005 max.	Al : 0.02 max.
Te : 0.01 max.	Cd : 0.005 max.		

4.2. Mechanical properties

Table 3. Mechanical Properties

Type	Tensile strength (N/mm ²)	Yield strength (N/mm ²)	Elongation ^{note 1)} (%)	Impact value ^{note 2)} (J/cm ²)	Hardness (HB)
FCD 400S	400 min.	270 min.	18 min.	70 min.	135 ~170

Remark : 1. Elongation are the value after fracture from the test piece with gauge length of $L_0=5D_0$ (Diameter of parallel portion)

2. Impact strength are the values resulting from the tests performed with unnotched test piece of $6 \times 6 \times 40\text{mm}$ at $-30^\circ\text{C} \pm 2^\circ\text{C}$.