

RAW MATERIALS / FERROUS

FNHA-2-A-920.00

DUCTILE IRON

1. SCOPE

1.1 This specification covers ductile iron casting materials also known as nodular iron for New Holland Inc. These materials are purchased to hardness, microstructure and chemical composition requirements. The ductile iron covered by this specification will be one of the grades shown in TABLE 1. The iron can be produced by any suitable method of melting and may be in the as cast or heat treated condition.

1.2 This specification may involve hazardous materials, procedures and apparatus. This specification does not address the health and safety problems associated with its application or use. It is the specification user's responsibility to follow appropriate health or safety practices and determine the application or regulatory limitation before use.

2. APPLICATION

This specification was originally released to define ductile iron materials. Typical application for specific grades are as follows:

Grade	Typical Applications
60-40-18	Maximum shock resistance, good for low temperatures. Pressure castings, such as valve and pump bodies. Best machinability.
65-45-12	Widely used for normal service. Machinery castings subjected to shock and fatigue loading. Good machinability. Low strength housings.
80-55-06	Most common used grade. Suitable for heat treatment. Crankshafts, gears and rollers.

100-70-03 Best combination of strength and wear resistance. Typically this grade is created by hardening 80-55-06, but can be cast. High strength gears, automotive and machine components.

Q&T This grade is typically made from the 80-55-06 base material. This is hardened to specific Engineering requirements. These parts cannot be subjected to shock loading. Wear shoes, wear plates.

3. DESIGNATION

The Engineering drawings shall specify ductile iron grade designation chosen from Table 1. This designation shall appear in the material block or noted on the Engineering drawing or standard as follows:

Ductile Cast Iron NH Grade 80-55-06

The part number for the specific grade shall be taken from Table 1 and entered in the parts list as seen in the illustration in Figure 1.

2	0	86050108	DI 80-55-06 STD 86507093
1	1	86549287	ROUGH CASTING REV A
DO NOT SCALE DRAWING			
MATERIAL DUCTILE CAST IRON NH GRADE 80-55-06			
THE FOLLOWING TOLERANCES APPLY UNLESS OTHERWISE SPECIFIED			
90° SHEET METAL DIMS: ±.02"			
FEATURES SHOWN: HONED OR AT 80° ±.02"			
MACHINED SURFACE FINISH: 6.3 / METRIC 250 / UNCH			
(EXCEPT DRILLED HOLES)			

Figure 1 - Engineering Drawing Title Block

The hardness test location shall be selected and noted on the drawing of the casting. This location shall be noted on the drawing with the note "Hardness Measuring Point"

					NAME	STD DUCTILE IRON		
					 NEW HOLLAND		ENGINEERING SPECIFICATION	
ALL	E	RLF	110274	JUL 97	THE INFORMATION HEREON IS THE CONFIDENTIAL AND PROPRIETARY PROPERTY OF NEW HOLLAND NORTH AMERICA, INC. AND/OR NEW HOLLAND CANADA, LTD. ANY USE, EXCEPT THAT FOR WHICH IT MAY BE LOANED, IS PROHIBITED.		FRAME 1	OF 4
ALL	D	RE	104739	931015				
FRAME NO.	REV	BY	ECN NO.	DATE				
APP.	DRAWN		IE	SEPT 93				
KHH OCT 93	CHECKED						PART NUMBER	
 86507093								
Documents Document Sharing H								

RAW MATERIALS / FERROUS

FNHA-2-A-920.00

TABLE 1
DUCTILE IRON DESCRIPTION

PART NUMBER	GRADE	CONDITION
86507094	60-40-18	Fully annealed ferritic
86050107	65-45-12	As - cast, fully annealed or subcritically annealed ferritic-pearlitic
86050108	80-55-06	As-cast or normalized pearlitic - ferritic
86050109	100-70-03	As-cast or normalized pearlitic
86507096	Q&T	Quenched and tempered martensitic

TABLE 2

CHEMICAL COMPOSITION REQUIREMENTS

ELEMENT	WEIGHT PERCENT	ELEMENT	WEIGHT PERCENT
Carbon	3.00 - 3.96	Tin	#
Silicon	2.10 - 2.90	Copper	0.79 Max.
Phosphorous	0.05 Max.	Antimony	0.035 Max.
Chromium	0.10 Max.	Cerium	0.003 - 0.02
Manganese	0.2 - 1.00	Sulfur	0.025 Max.
# Can not exceed a maximum of 0.06 = (tin allowed) + (specified Copper/10) - 0.02			

4. RELATED STANDARDS

ASTM A247 - Method for Evaluating the
Microstructure of Graphite in Iron Castings.
ASTM A536 - Specification for Ductile Iron
Castings.
ASTM E10 - Test Methods for Brinell Hardness of
Metallic Materials.
86507096(FNHA-3-A-010.00) - Casting Supplier
Code and Identification Markings
86507097(FNHA-4-A-005.00) - Casting Quality
Acceptance Guidelines

5. REQUIREMENTS

5.1 CHEMICAL COMPOSITION

The primary intent of this specification is to obtain castings which possess certain mechanical properties meeting specified minimum requirements. The chemical requirements shown on Table 2 are considered the minimum necessary controls to help maintain these mechanical properties for all grades.

 Copyright New Holland Provided by IHS Markit under license with IHS No reproduction or networking permitted without license from IHS Full document details: NH 86507093 REV E 1997	NAME			PART NUMBER		
	STD DUCTILE IRON			86507093		
ENGINEERING SPECIFICATION			REV. E	FRAME 2	OF 4	 Document Sharing Hub