

Seamless Stainless Steel Pipe*

Hisashi Kawasumi**

Shinichi Akamatsu**

Tadao Katsuki****

Toshiaki Kasuya****

Kazunari Takahashi****

Tetsuo Shimizu****

1 Introduction

With its application expanding in recent years, stainless steel is showing a high growth of demand. In the field of steel pipe, too, the demand for stainless steel is growing, owing to its excellent corrosion resistance, heat resistance, high-temperature strength and low-temperature toughness as essential piping material for

steel pipe which is made by this Mannesmann pipe-making method.

2 Manufacturing Method

Pipe with its outside diameter up to 7" is manufactured by Mannesmann mandrel mill method (small

Table 1 Chemical composition (JIS G3459)

(wt. %)

Element	Symbol	Unit	Range
Carbon	C	%	0.25 - 0.35
Manganese	Mn	%	0.30 - 0.60
Phosphorus	P	%	0.015 - 0.030
Sulfur	S	%	0.010 - 0.020
Silicon	Si	%	0.05 - 0.15
Nitrogen	N	%	0.005 - 0.010
Copper	Cu	%	0.010 - 0.030
Aluminum	Al	%	0.010 - 0.030
Chromium	Cr	%	0.010 - 0.030
Nickel	Ni	%	0.010 - 0.030
Iron	Fe	%	Balance

shows the features of pipe-making by the Mannesmann method.

3.4 Microstructures

Microstructures etched by the 10% oxalic acid are shown in **Photo 1**. No ditch structure or no precipitation of carbides is observed on the austenite grain boundary, thereby indicating that carbon is in the condition of



Outer

