

中华人民共和国国家标准

高温合金低倍、高倍  
组织标准评级图谱

GB/T 14999.5—94

代替 GBn 187.5—82

Photomicrographs and photomacrographs  
for evaluating of heat-resisting superalloys

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本标准适用于GH4033、GH4037、GH2130、GH2302、GH4043、GH4049、GH4143、GH4118合金轧制棒材的纵向低倍、纵向断口、纯洁度、铁基、镍基高温合金板材和棒材晶粒度及GH4033合金轧制棒材的带状组织标准评级图。

当印刷版本图片不清晰时，以正式批准复制的照片为准。

1 高温合金棒材纵向低倍组织评级图

- 1.1 合格组织
- 1.2 不允许组织和缺陷典型图片

2 高温合金棒材纵向断口评级图

- 2.1 断口疏松 A组
- 2.2 断口疏松 B组
- 2.3 断口分层评级图

3 高温合金纯洁度评级图

- 3.1 A类
- 3.2 B类

4 晶粒度带状组织评级图

- 4.1 细晶粒集中带状组织
- 4.2 细晶粒分散带状组织

高温合金棒材纵向低倍组织评级图  
合格组织

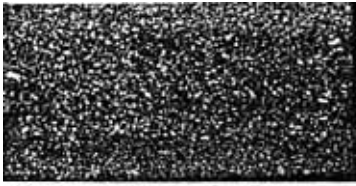


图 1

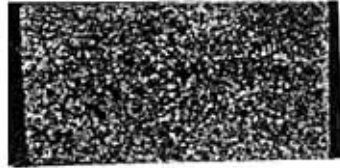


图 2

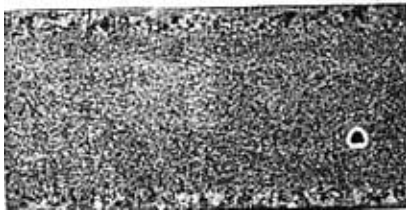


图 3

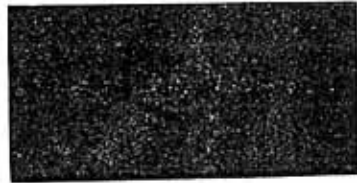


图 4



图 5

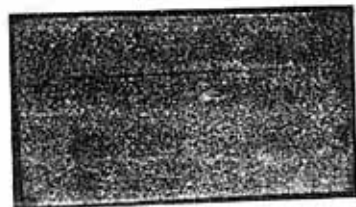


图 6

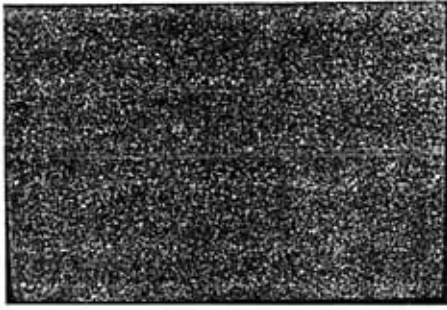


图 7

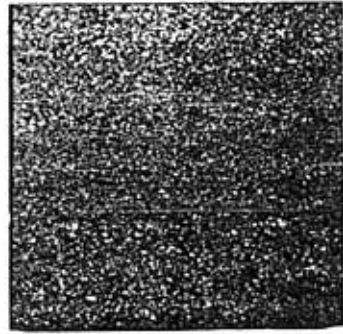


图 8

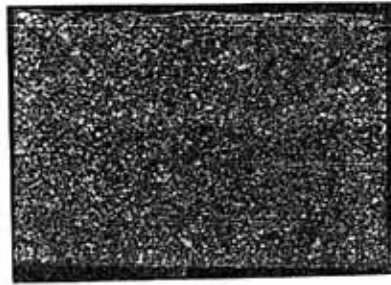


图 9

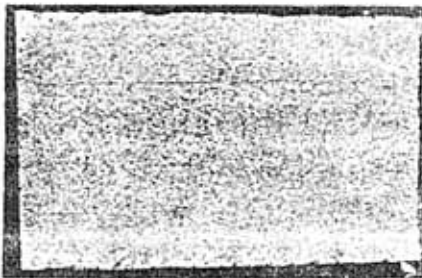


图 10

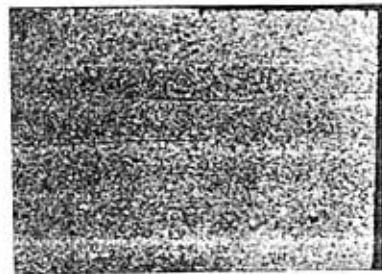


图 11

不允许组织和缺陷典型图片

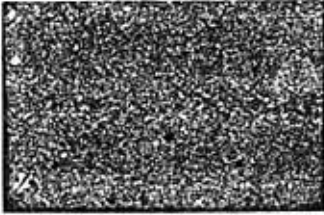


图 12

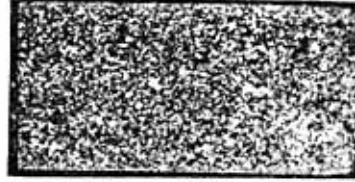


图 13

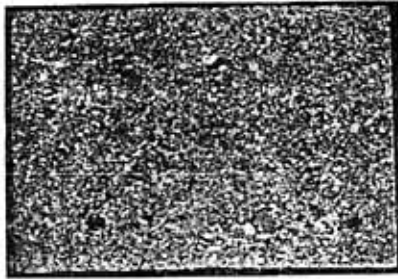


图 14

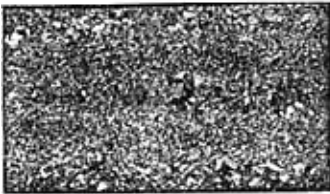


图 15



图 16

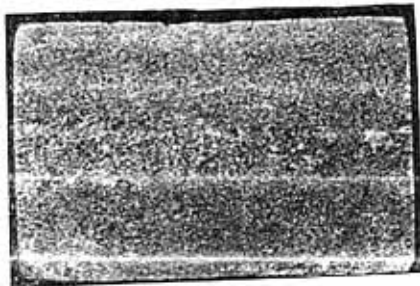


图 17



图 18

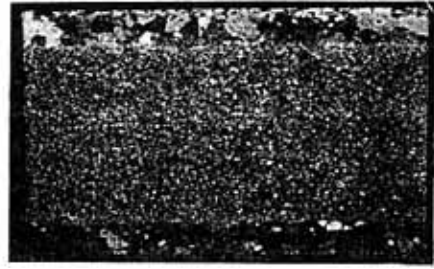


图 19

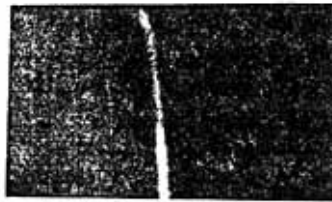


图 20

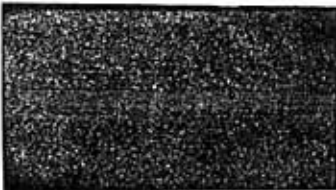


图 21

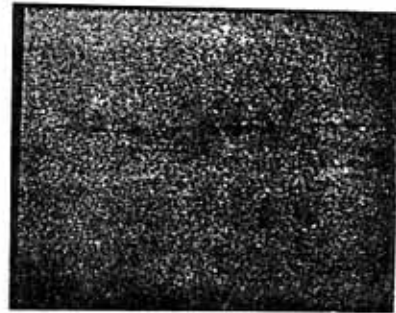


图 22



图 23

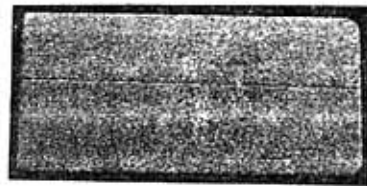


图 24



图 25

图 26

高温合金棒材纵向断口评级图  
断口疏松A组



1 级



2 级



3 级



4 级

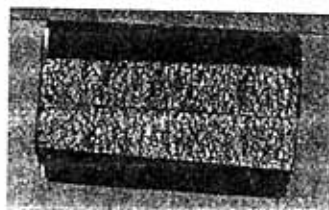


5 级

图 1



1 级



2 级

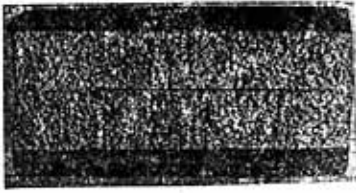


3 级

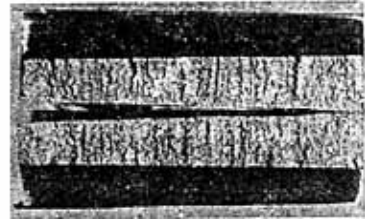


4 级

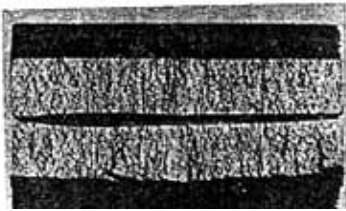
图 2



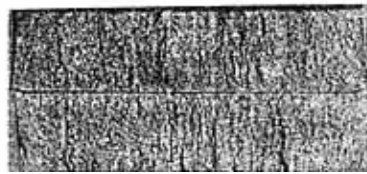
1 级



2 级



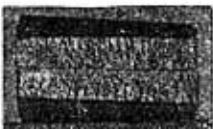
3 级



4 级

图 3

断口疏松B组



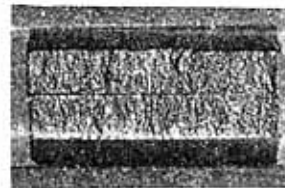
1 级



1 级



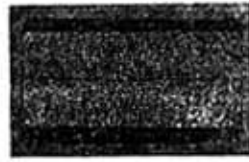
2 级



2 级



3 级



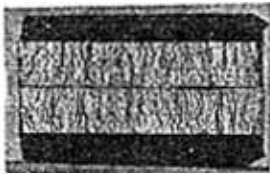
3 级



4 级



4 级



5 级

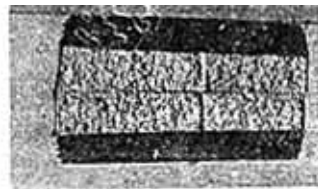


5 级

图 4  
断口分层评级图



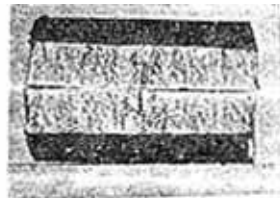
a



b



c



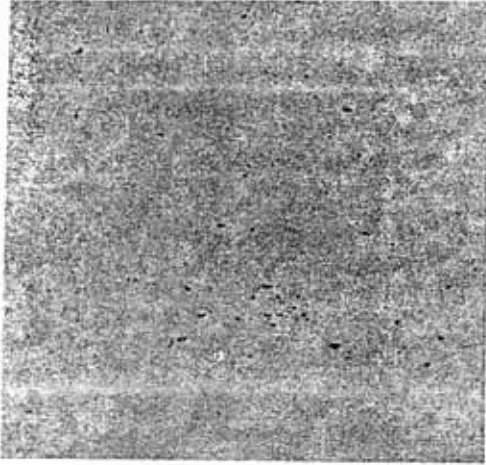
d

图 5

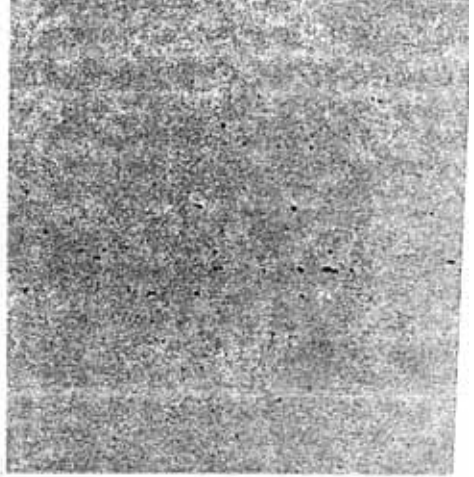


高温合金纯洁度评级图

A 类

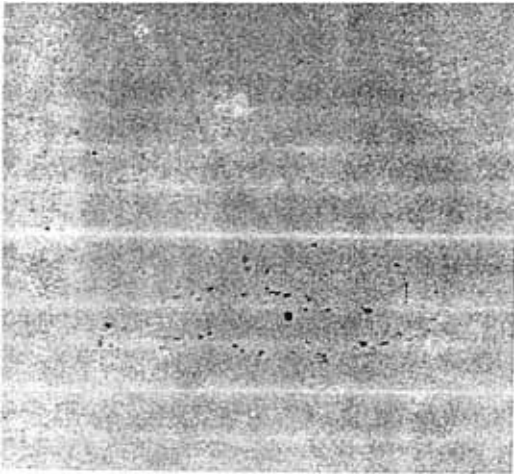


a

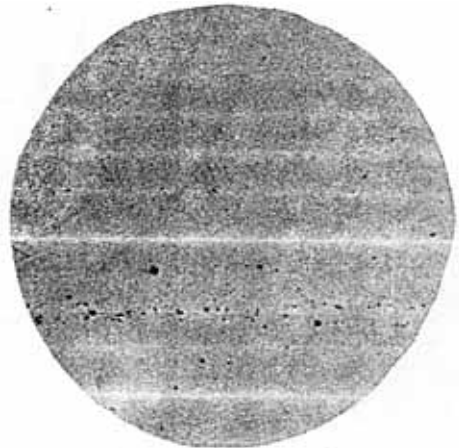


b

1 级

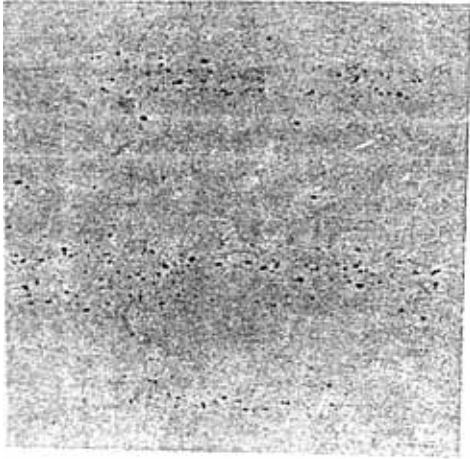


a

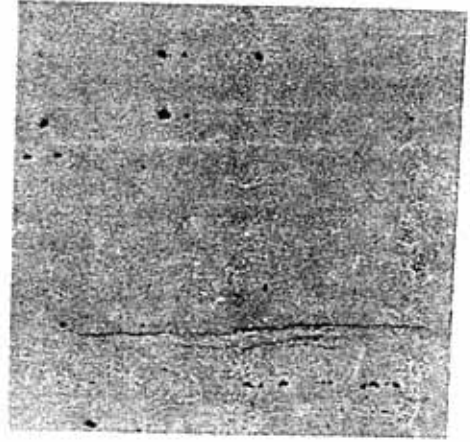


b

2 级

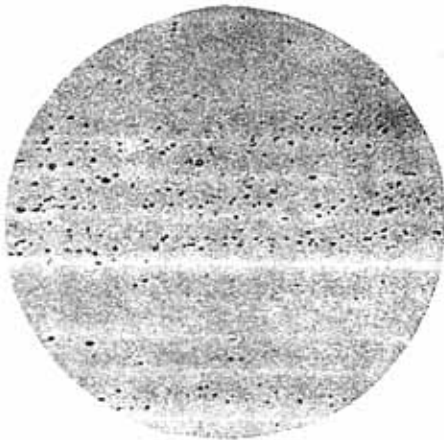


a

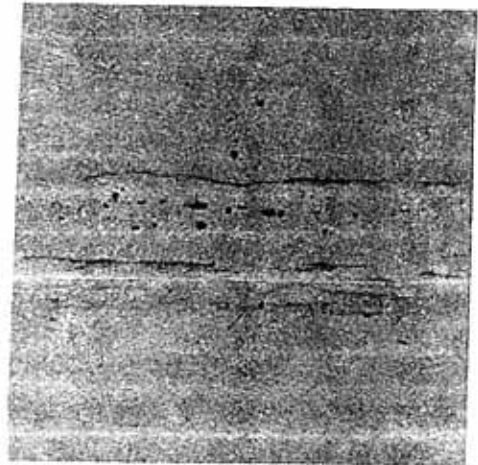


b

3级

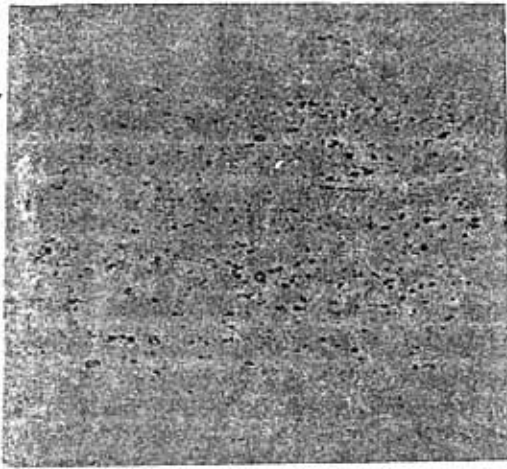


a



b

4级



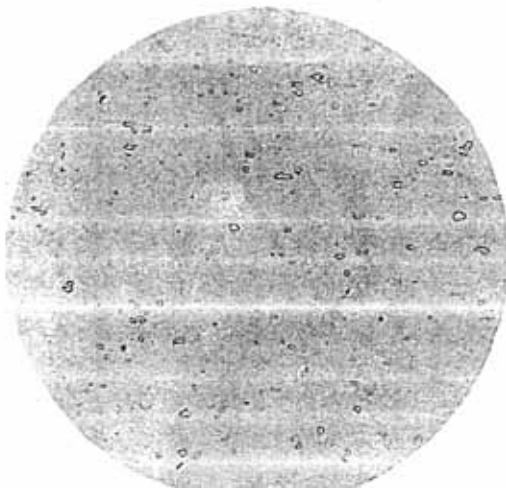
a



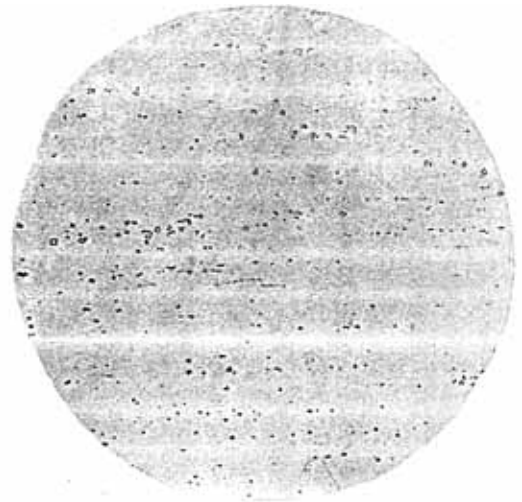
b

5 级

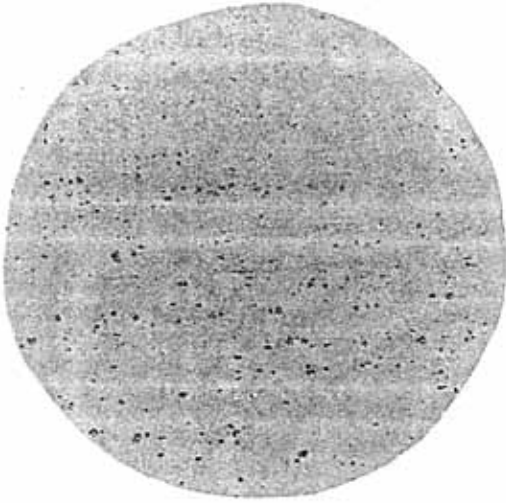
B 类



a



b

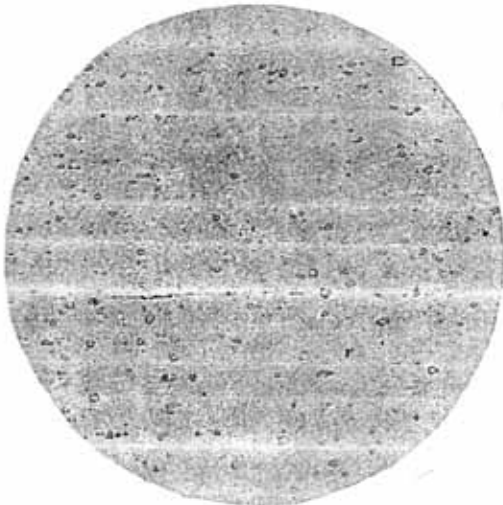


c

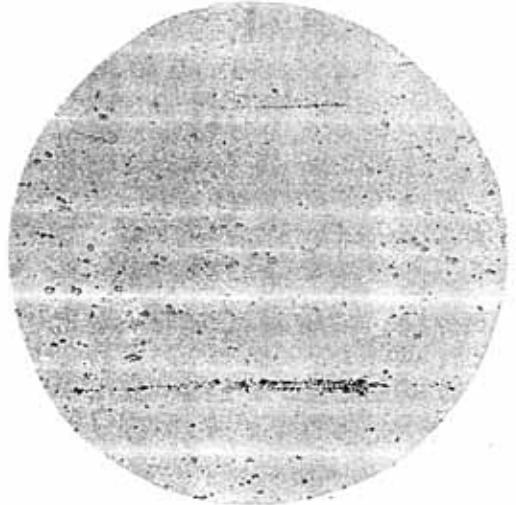


a

1 级

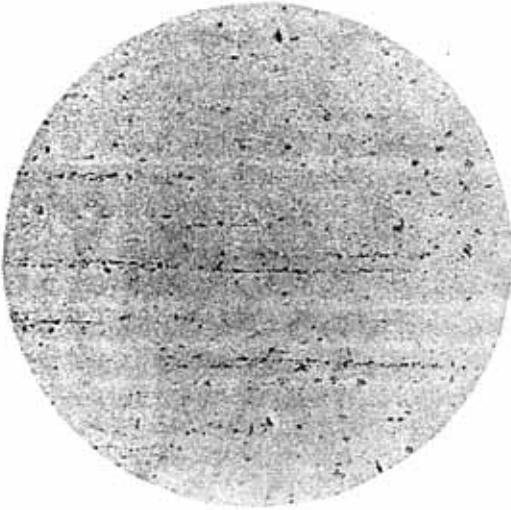


b

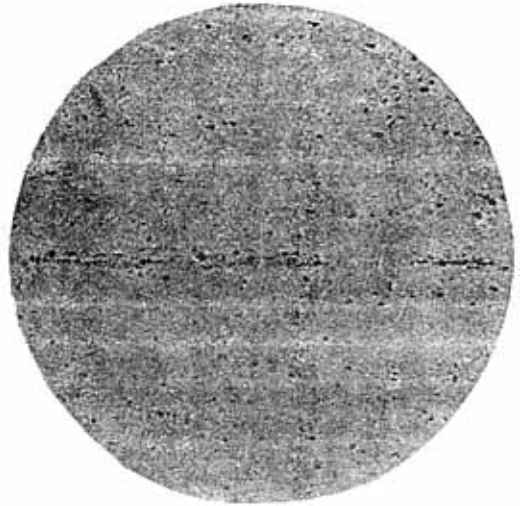


c

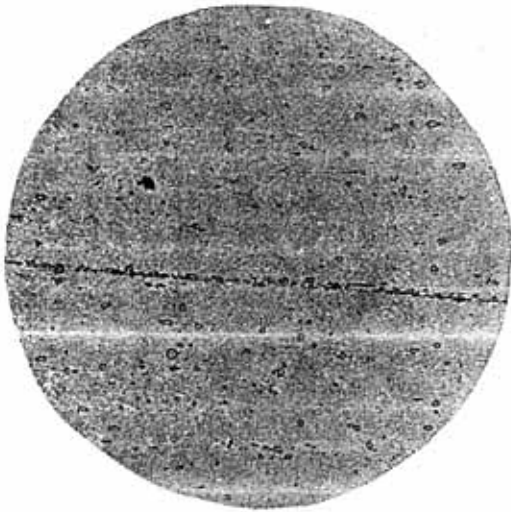
2 级



a

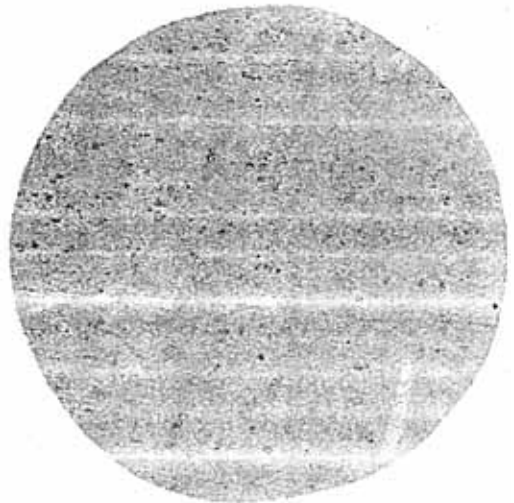


b

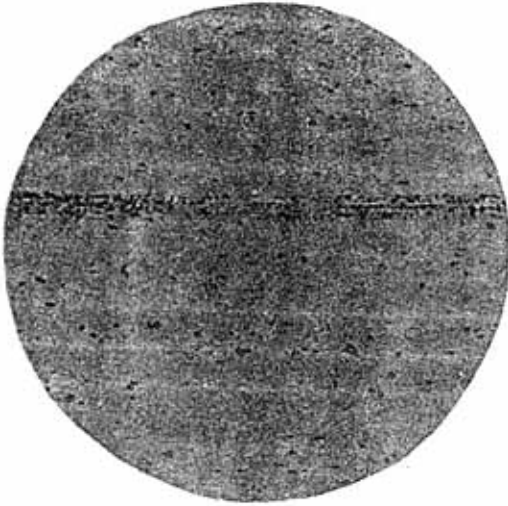


c

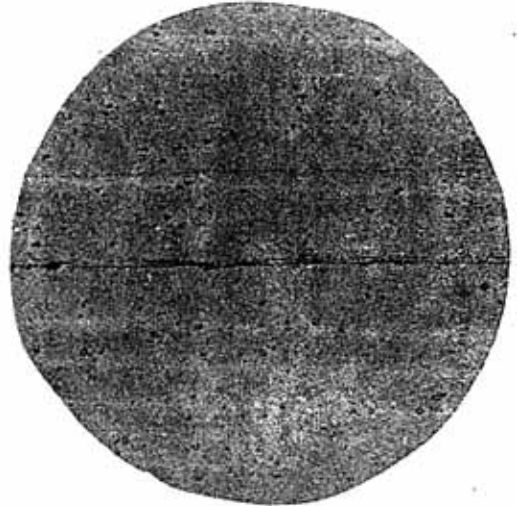
3 级



a

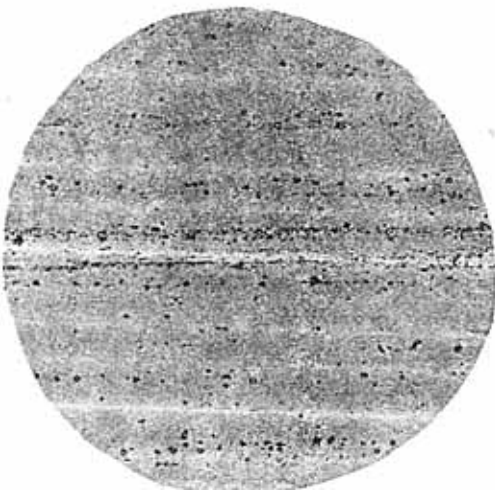


b

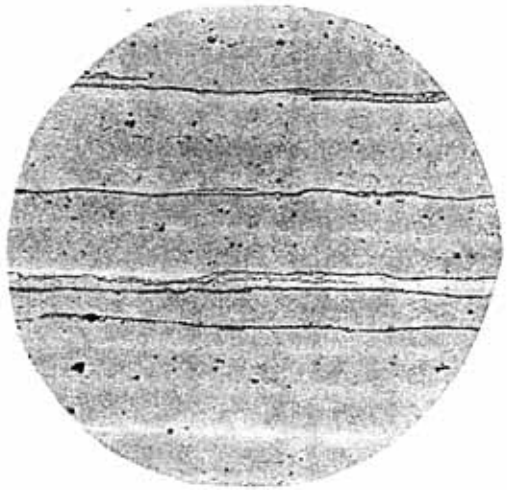


c

4 级



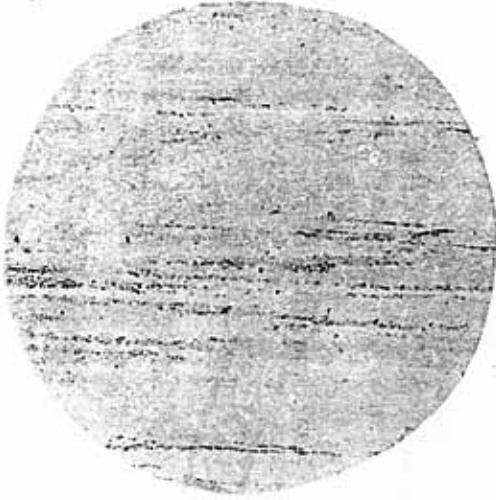
a



b

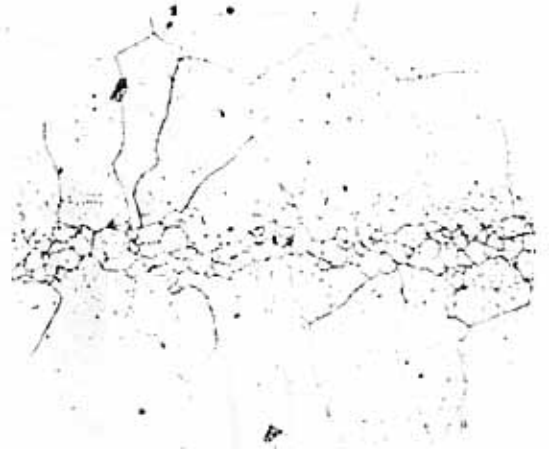
晶粒度带状组织评级图

细晶粒集中带状组织

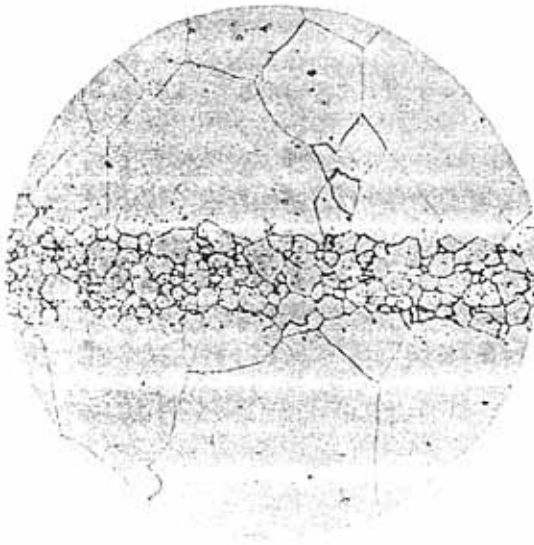


c

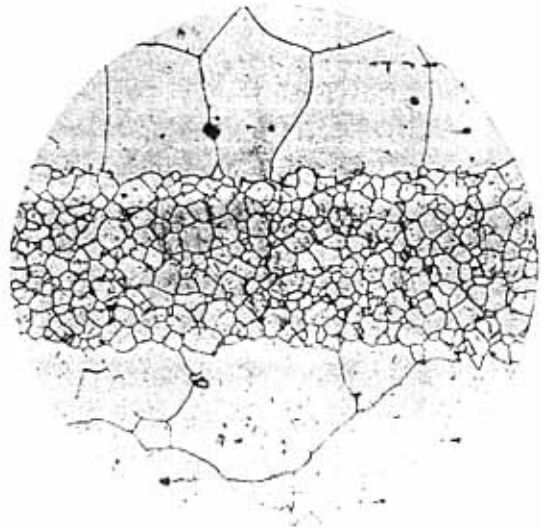
5 级



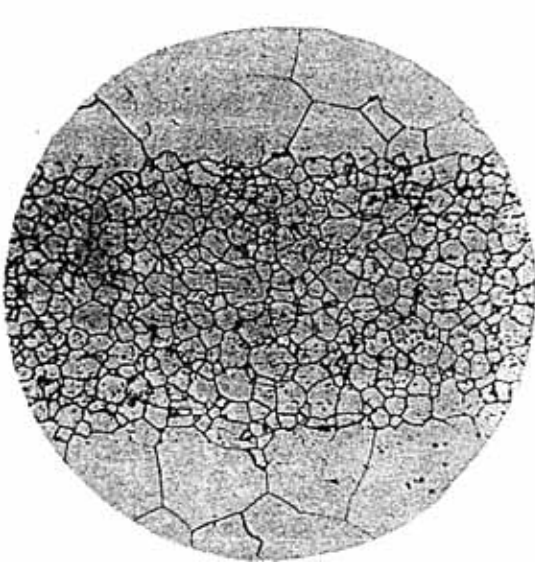
1 级



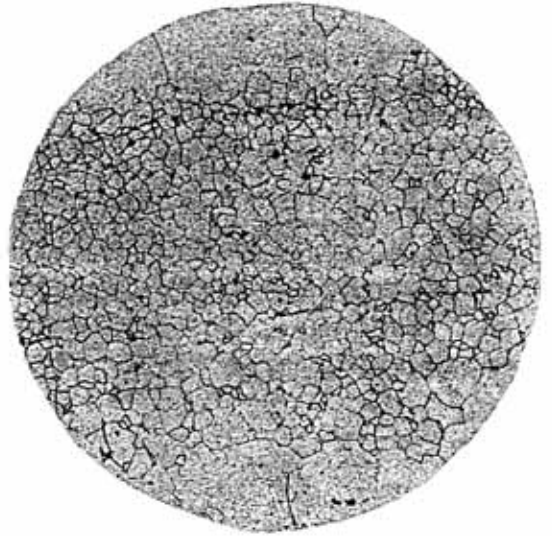
2 级



3 级



4 级



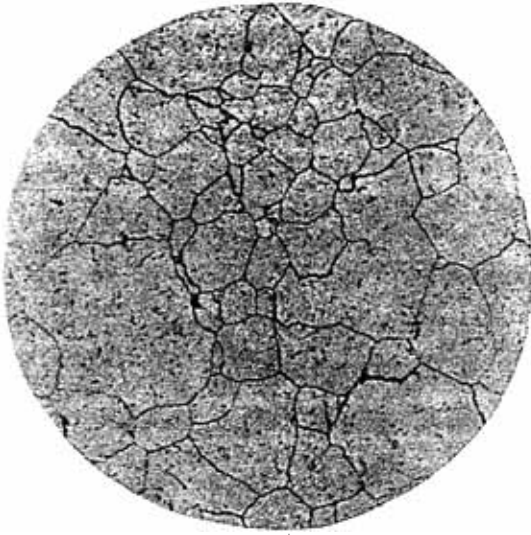
5 级

细晶粒分散带状组织

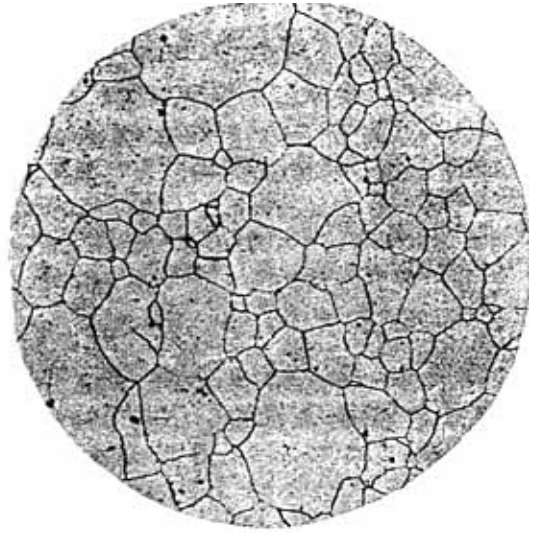


1 级

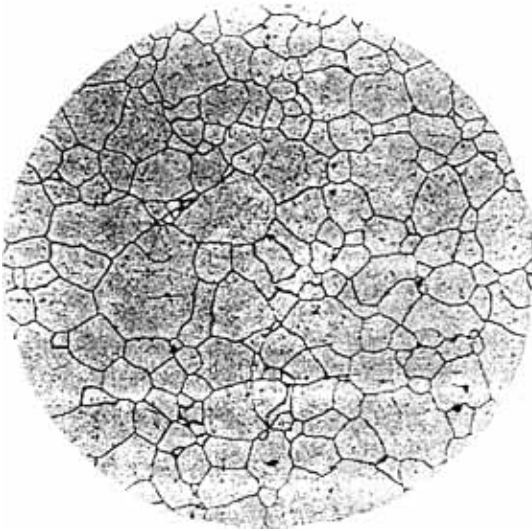




2 级



3 级



4 级



5 级

附加说明:

本标准由中华人民共和国冶金工业部提出。

本标准由抚顺钢厂负责起草。

本标准主要起草人金谨秀、付向东。

本标准委托冶金工业部标准化研究所负责解释。