

Date

2005-08-29

DIEVAR® Test Results

Cert. No.

31982/05

Consignee

ASARG UDDEHOLM S.A.

Order No.

2340089-03

Mill Order No.

5004010 01 01

No. of pcs delivered

1 /4338 Kg

1. Chemical composition (Wt %)

| C | Si | Mn | P | S | Cr | Mo | V | Cu |
|------|------|------|-------|--------|------|------|------|------|
| 0.36 | 0.25 | 0.51 | 0.008 | 0.0004 | 5.03 | 2.36 | 0.54 | 0.05 |

2. Microcleanliness rating ASTM E45 Method A, plate I-r

| A | | B | | C | | D | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| T | H | T | H | T | H | T | H |
| --- | --- | 0.5 | --- | --- | --- | 1.0 | 0.5 |

3. Annealed microstructure and hardness

| | | | | | | |
|---|-----|----|----------------|--------------|--------------|---|
| Microstructure/microbanding standard used | | | | NADCA 207-97 | | |
| Hardness | 163 | HB | Microstructure | C2 | Microbanding | C |

4. As quenched hardness and grain size*

| | | | | | |
|----------|------|-----|------------|------|-----|
| Hardness | 53.8 | HRC | Grain size | ASTM | 9.0 |
|----------|------|-----|------------|------|-----|

5. Impact-test data**

Centre position short transverse

| | | | | | |
|--------------|------|----------|---------------|-------|----------|
| Charpy V | 27 J | HRC 44.4 | Unnotched | 366 J | HRC 44.4 |
| 26 -29 -26 J | | | 382-355-360 J | | |

6. Ultrasonic inspection (machined surface)

| | | | | |
|-----------|-----------|------------------|-----|-----------------------|
| Procedure | ASTM A388 | Acceptance level | 1.5 | mm flat-bottomed hole |
|-----------|-----------|------------------|-----|-----------------------|

Test results certified by


(Quality Control)



*1020°C (1870°F) /30 min., air cool.

**1020°C (1870°F) /30 min., oil quench. Temper (2+2h) to 44-46 HRC.