



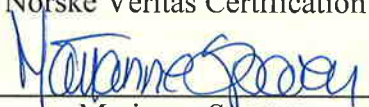
DET NORSKE VERITAS

EC-TYPE EXAMINATION CERTIFICATE


- [2] **EQUIPMENT OR PROTECTED SYSTEM INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES DIRECTIVE 94/9/EC**
- [3] EC-Type Examination Certificate Number: **DNV-2005-OSL-ATEX- 0378X**
- [4] Equipment or Protective System: **Mechanical seals type HS**
- [5] Applicant – Manufacturer or Authorized representative: **Huhnseal AB**
- [6] Address: **Järvgatan 1, P.O.Box 288, 26123 Landskrona, Sweden**
- [7] This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- [8] DNV, notified body number 0575 in accordance with Article 9 of Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.
- The examination and test results are recorded in confidential report no. : **2005-3174**
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN 13463-1:2001 and EN 13463-5:2003
- [10] If the sign “X” is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.
- [11] This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protected system. If applicable, further requirements of this Directive apply to the manufacturer and supply of this equipment or protective system.
- [12] The marking of the equipment or protective system shall include the following:

 **I/II 1/2 G/D c**

Høvik, 2009-02-10
for Det Norske Veritas Certification AS


Marianne Spæren
Certification Manager




Håkon S. Håkonsen
Technical Reviewer

Notice: This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 300.000. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



[13]

Schedule

[14] EC-TYPE EXAMINATION CERTIFICATE No.: DNV-2005-OSL-ATEX- 0378X

Certificate History

Revision	Description	Issue date
	Original certificate	2009-02-10

[15] **Description of Equipment or Protective System**

The mechanical seals type HS are intended to be used as a component in pumps and tanks with rotating shafts.

Type Identification :

HS1 type BA & ED, are double cartridge seals. With the springs located on the atmospheric side, outside the seal, they are protected against particles that can clog-up the spring movement. These seals accommodate variable pressures from both the product and from the barrier fluid since the seals are double balanced. The HS1 types are intended to be used in category 1, 2 and 3 applications. For category 1 applications a safety system consisting of two independent systems is needed. Recommended are temperature measurement in the seal flange and level measurement for the barrier fluid. If tap water is available to connect directly to the seal, a flowmeter to monitor the barrier fluid is needed. It is also possible to use two independent temperature measurements as a safety system for category 1. For category 2 applications a safety system consisting of temperature measurement is applied. These seals are intended for shaft diameter from 20 – 200 mm.

HS2 type BC, is a double cartridge seal intended for higher pressures from both the product side, and the sealing fluid side. The HS2 is intended to be used in category 1, 2 and 3 applications. For category 1 applications a safety system consisting of two independent systems is needed. Recommended are temperature measurement in the seal flange and level measurement for the barrier fluid. If tap water is available to connect directly to the seal, a flowmeter to monitor the barrier fluid is needed. It is also possible to choose two independent temperature measurements as a safety system for category 1. For category 2 applications a safety system consisting of temperature measurement is applied. This seal is intended for shaft diameter from 20 – 200 mm.

HS3 type BF & ES, are single cartridge seals in the same basic configuration as the BA and ED seals. The springs are here also located on the atmospheric side and are therefore protected from the product. The HS3 types are intended to be used in category 1, 2 and 3 applications. For category 1 applications a safety system consisting of two independent systems is needed. One is a temperature measurement on the flange. The other are the dry-running tests at Huhnseal AB provided that the shaft speed doesn't exceed the documented shaft speed (specifically for dry-running seals, such as in e.g. top mounted agitators, this safety system is also valid as long as the peripheral speed during service does not exceed 1 m/s at the seal faces). For category 2 applications a safety system consisting of temperature measurement is applied. These seals are intended for shaft diameter from 20 – 200 mm.

HS4 type BX, is a single cartridge seal. A sleeve / spring transfers the torque and gives the needed spring load by pulling the seal-ring. The sleeve / spring also keeps the seal parts together as a cartridge. The HS4 is intended to be used in category 1, 2 and 3 applications. For category 1 applications a safety system consisting of two independent systems are needed. The dry running tests at Huhnseal AB are one safety system if the shaft speed doesn't exceed the documented shaft speed. For category 2 applications a safety system consisting of temperature measurement is applied. This seal is intended for shaft diameter from 20 – 95 mm.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 300.000. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.



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HS4 type AN, CN, CO, HK, HN & MA, are all single mechanical seals. These seals are intended for category 3 and shaft size 20 – 100 mm.

ATEX marking	Type	Safety measures
⊕ I M1 c	HS1	Two independent safety system must be provided. Either by the use of two independent temperature sensors or one temperature sensor and one level sensor for the barrier fluid. If tap water is available on site, a flowmeter replaces the level sensor.
⊕ I M2 c	HS1	One safety system must be provided. This shall be by the use of a temperature sensor.
⊕ II 1 G/D c	HS1, HS2, HS3	Two independent safety system must be provided. Either by the use of two independent temperature sensors or one temperature sensor and one level sensor. If tap water is available on site, a flowmeter replaces the level sensor. For the type HS3 the dry running tests at Huhnseal AB are one safety system if the shaft speed does not exceed the documented limit values.
⊕ II 2 G/D c	HS1, HS2, HS3, HS4	One safety system must be provided. This shall be by the use of a temperature sensor.
⊕ II 3 G/D c	HS1, HS2, HS3, HS4	Not required

Temperature rating:

The seals are protected by the use of temperature sensors. These sensors will shut down the equipment if the temperature reaches a critical value.

[16] **Report No.:** 2005-3174
Project No.: 42035479

Descriptive Documents

Number	Title	Rev.	Date
14212-A-BA	Type BA	0	2006-04-20
14212-B-ED	Type ED	0	2006-04-20
14212-C-BF	Type BF	0	2006-04-20
14212-D-ES	Type ES	0	2006-04-20
14212-E-BC	Type BC	0	2006-04-20
14212-F-BX	Type BX	0	2006-04-20
Norm AN	Type AN	0	1989-04-14
Norm CN	Type CN	1	1976-01-16
Norm CN	Type CO	1	1976-01-16
Norm HK	Type HK	2	1983-08-18
Norm HN	Type HN	4	1996-04-10
Norm MA	Type MA	3	1983-08-18
141.12967-90	Thermosiphon system Eex /Atex execution	4	2005-08-02



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[17] Special Conditions for Safe Use

The mechanical seals type HS1, HS2 and HS3 must be used with one or two independent safety systems when used as category 1, M1, 2 or M2 applications, according to EN13463-6. At least one of the safety systems shall be temperature measurement as described by the manufacturer. The user must make provisions for shut down of the equipment before the temperature reaches a critical temperature with respect to the applicable potential explosive atmosphere.

[18] Essential Health and Safety Requirements

See part 9 of this certificate

END OF CERTIFICATE

Production Quality Assurance Notification

- [2] **EQUIPMENT OR PROTECTIVE SYSTEM OR COMPONENTS INTENDED FOR USE IN POTENTIALLY EXPLOSIVE ATMOSPHERES
DIRECTIVE 2014/34/EU**
- [3] **Notification Number:** Presafe 17 ATEX 10329Q Issue 0
- [4] **Equipment, Protective System or components as listed:** Mechanical seals
Type of protection: constructional safety

(The EU-Type Examination Certificates based on this notification are listed by the notified body)
- [5] **Applicant – Manufacturer or Authorized representative in the Community** Huhnseal AB
Järvgatan 1,
261 44 Landskrona
Sweden
- [6] **Manufacturing Locations:** As above
- [7] **DNV GL Nemko Presafe AS, notified body number 2460 for Annex IV in accordance with Article 17 of the Council Directive 2014/34/EU of 26 February 2014 notifies to the applicant that the manufacturer has a production quality system which complies with Annex IV of the Directive**

This quality system in compliance with Annex IV of the Directive also meets the requirements of Annex VII, Conformity to type based on Product Quality Assurance.
- [8] **This notification is based on audit report listed on page 2**

This notification can be withdrawn if the manufacturer no longer satisfies the requirements of Annex IV

Results of periodical re-assessment of the quality system are a part of this notification.
- [9] **This notification is valid until 2020-05-31 and can be withdrawn if the manufacturer does not satisfy the production quality assurance surveillance**
- [10] **According to Article 16 (3) of the Directive 2014/34/EU the CE mark shall be followed by the identification Number 2460 identifying the Notified Body involved in the production control stage.**

Asle Kaastad
For DNV GL Nemko Presafe AS

The Certificate has been digitally signed.
See www.presafe.com/digital_signatures for more info



Date of issue: 2017-05-09

This certificate may only be reproduced in its entirety and without any change.

Production Quality Assurance Notification

[11] Notification Number No.:

Presafe 17 ATEX 10329Q

Issue 0

Project number: D0000555

Notification History

Issue	Description	Issue date	Report no.
0	Original issue (replaces DNV-2005-OSL-ATEX-0260Q)	2017-05-09	325959