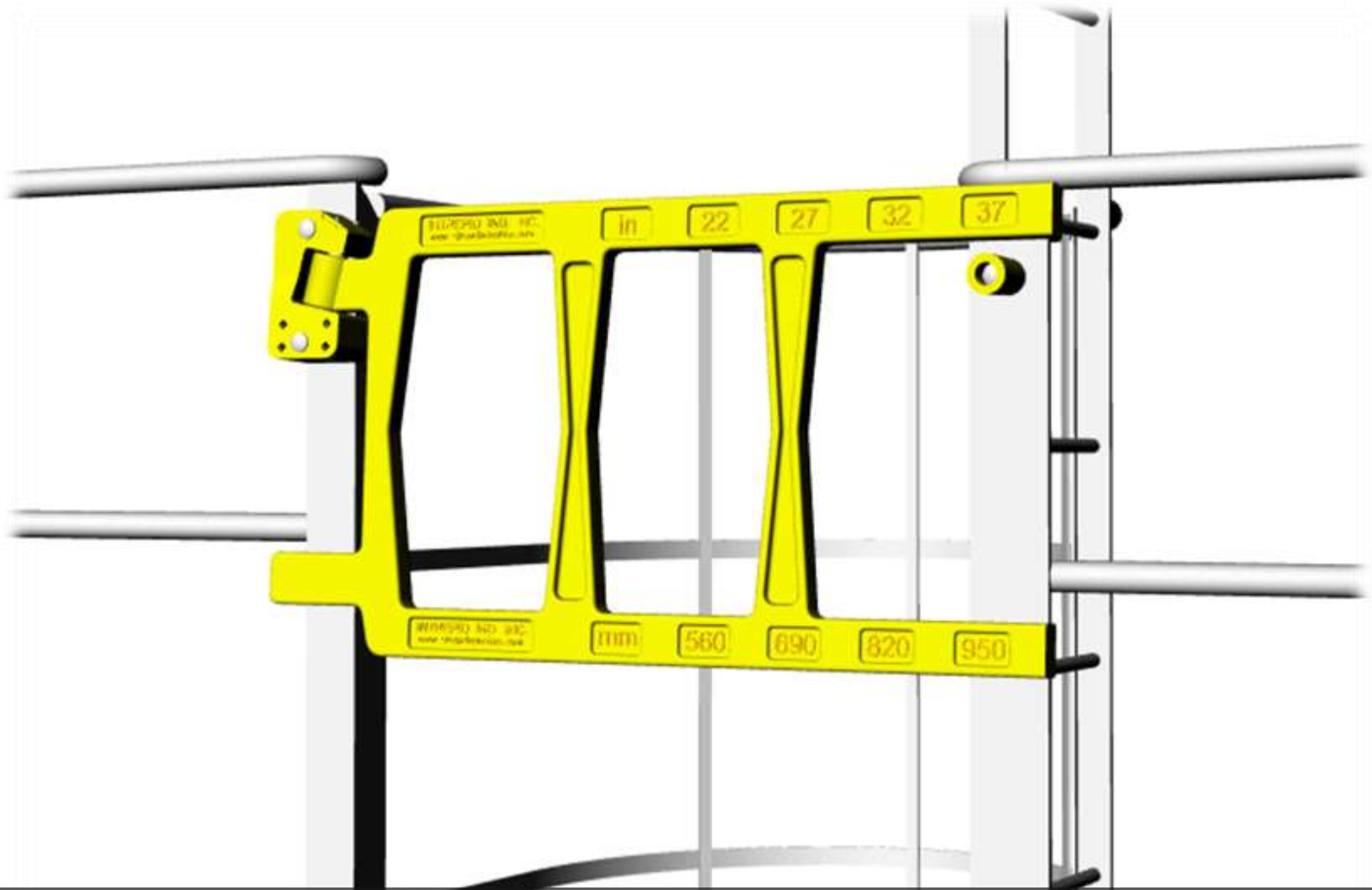


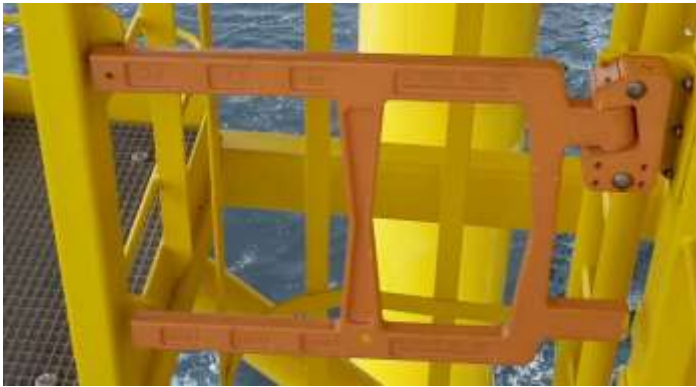


Walter Haulez
Member of Dutch Standardization Institute

INTREPID SAFETY PRODUCTS B.V.
The Netherlands



Gravity closing, Ladderway Safety Gate



Gravity – Closing, Ladderway Safety Gate

UDG

7.4 Gates

7.4.1 Self-closing gate

A self-closing gate shall be used for passage of persons and shall meet the requirements of the adjacent guard-rails.

Divergent to [7.1.6](#), a toe-plate is not required. Shear and crushing points shall be avoided. The dimensions shall be in accordance with [Figure 6](#).

Gates shall be

- a) self-closing,

NOTE Self-closing can be achieved, for example, by spring or gravity force.

- b) held in closed position but not locked,
- c) designed to open easily onto the platform or floor, and
- d) close against a firm stop to prevent users pushing against them and falling through the opening.

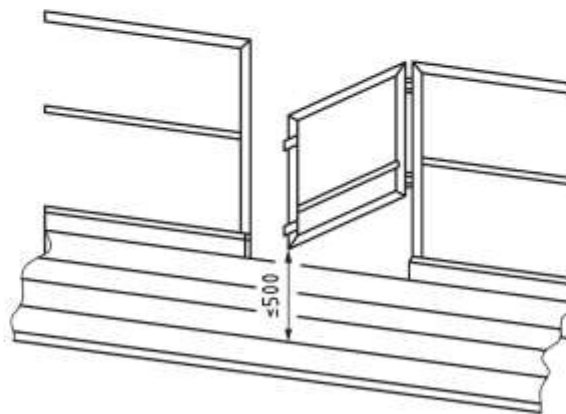
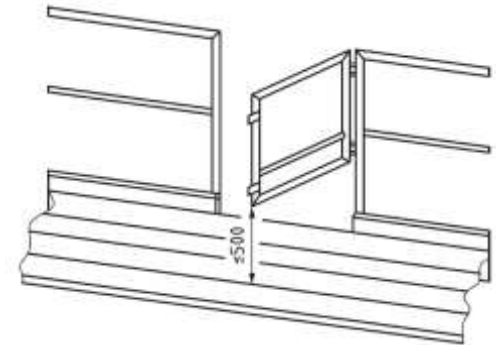


Figure 10 — Example of self-closing gate (open onto the platform)

TOEBOARD CONSIDERATION

- November 2016, OSHA (USA) published their new Walking Surfaces Standard. While a toeboard was considered, it was not accepted as part of the standard.
- During the 2016 revision of the European standard EN ISO 14122 an integrated toeboard on safety gates was considered, but rejected due to it would introduce other hazards.
- NORSOK S-002, 5.1.2 states that the gate shall have a handrail and a kneerail.



TWO ISSUES TO CONSIDER:

- A toeboard may prevent objects from falling through the opening.
- A toeboard may prevent the gate from opening.
 - Tool or bolt stuck in grating
 - Snow and/or ice accumulation

Safety Gate

Risk Assessment done by Safety Consultant : MECID



Toe-plate and self-closing gates

A toe-plate integrated with a safety gate is in general not widely applied due to the additional risks of blocking (see table at 1) or being kicked/crushed (see table at 5 or 6). In certain situations an integrated toe-plate may be applicable when e.g. the a ladder ends at a single small platform. The risk that objects are being kicked of that small platform or a foot slips away during maintenance on that platform at a machine (part) is more likely compared with a risk of blocking.

Conclusion

Based on a detailed risk assessment it is likely that a safety **gate without toe-plate is a more safe** solution. The figure 10 of EN 14122-3 shows a dimension of less than 500 mm and the simultaneous application of ISO 13854 / EN 349 will lead to the justified lower (knee) rail of the safety gate without a toe-plate.

8.2.2 Loads

8.2.1.1 Load for verification of usability

The load for verification of usability is represented by [Formula \(2\)](#):

$$F_U = 300 \text{ N/m} \times L \quad (2)$$

8.2.1.2 Load for verification of strength

The load for verification of strength is represented by [Formula \(3\)](#):

$$F_S = \gamma \times F_U \quad (3)$$

where the material factor $\gamma = 1,75$ for steel and aluminium is derived using [Formula \(4\)](#):

$$F_S = 525 \text{ N/m} \times L \quad (4)$$

NOTE When using other materials, e.g. GRP (glass-reinforced plastic), higher values and **impact testing** might be required.

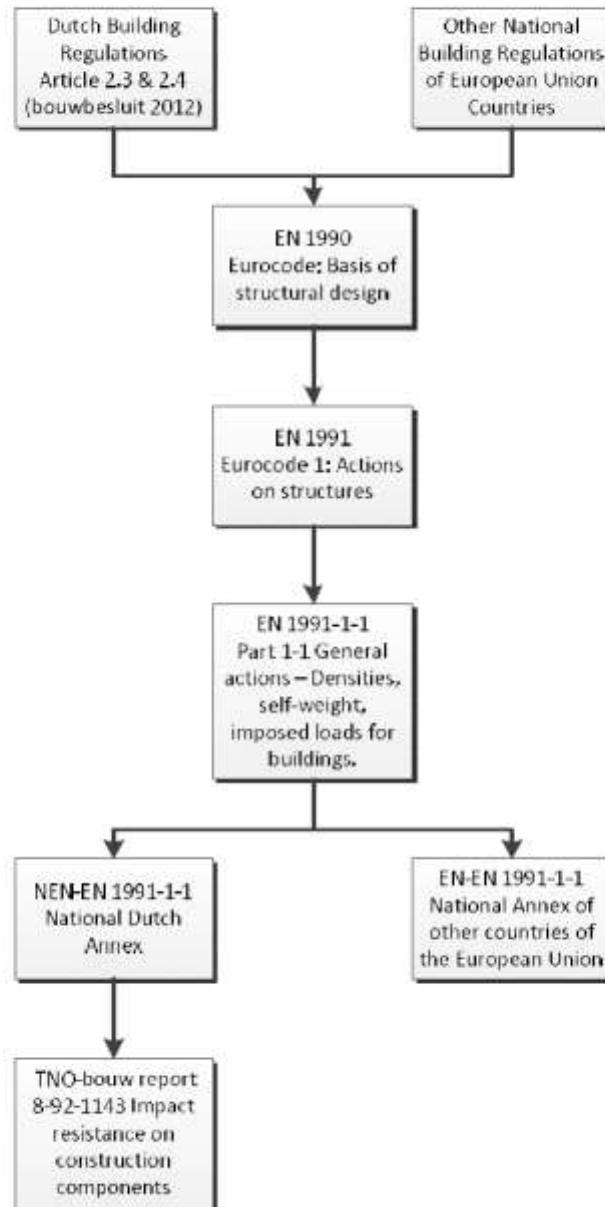
8.2.1.3 Preload

The preload is represented by [Formula \(5\)](#):

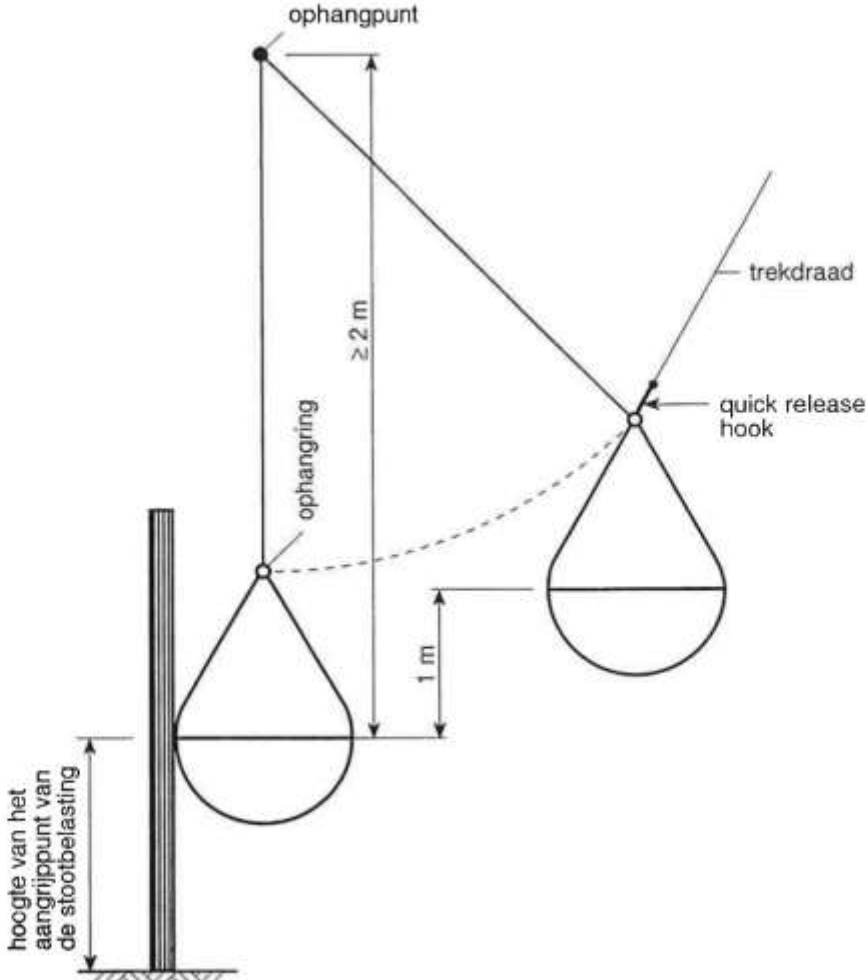
$$F_P = 75 \text{ N/m} \times L \quad (5)$$

TÜV impact test

Pendulum impact test by TÜV Nederland. According to the national Dutch Annex NEN-EN 1991-1-1. (similar to other national annex of countries of the European Union). See attached report.



TÜV impact test



Figuur 2: Ophanging van het stootobject

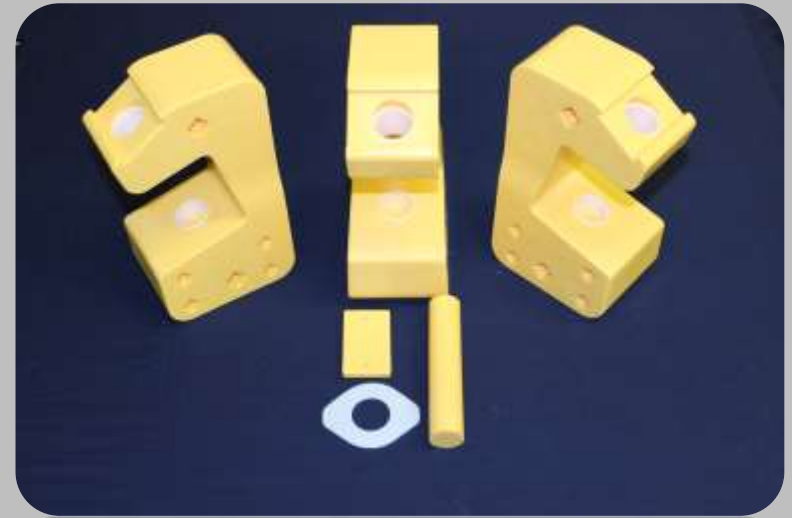
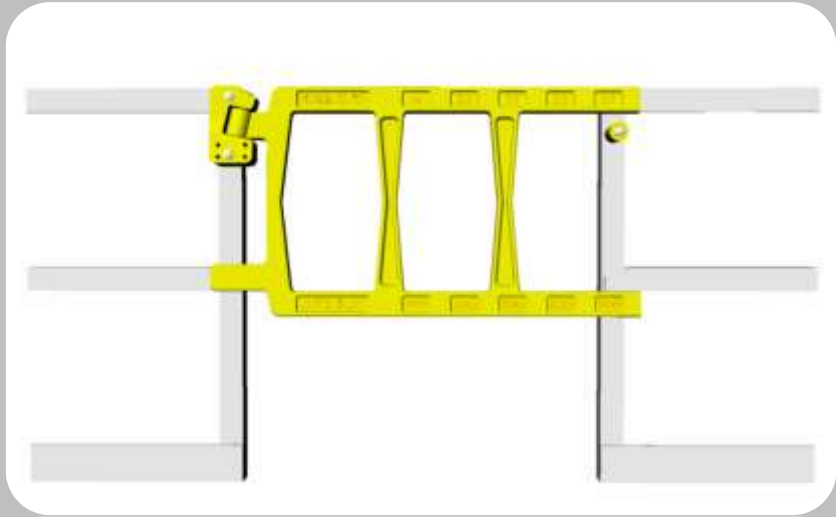
TÜV Impact on Intrepid Safety Gate UDG-37

VIDEO OF IMPACT TEST AVAILABLE FROM ISP

**Contact Walter Haulez
info@isp-products.com**



UDG Features



- 1 Easy Installation**
Universal Hinge Design, light weight
Kits for Pipe and Square Tube
- 2 Design**
Gravity Closing
Horizontal Swing
- 3 Material Strength**
Withstands 50 kg Impact TÜV-Test
Will Not Degrade
- 4 Construction**
UV-Resistant Polyurethane
PTFE Wear Plate & Bushings
- 5 Widespread Success**
Over 30 years
Specified by Many Companies
- 6 Benefits**
Maintenance Free
Economical

Steel or Plastics ?

- Main reason to use plastics:
 - No corrosion
 - Maintenance free
 - Reliable & Safe
 - Service life > 30 years
- Point of awareness:
 - Use the right material !!

THANK YOU!



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