



- A cooperative partner in fast track development and production of components based on **NORSElast**<sup>®</sup>
- Cooperate with the world-leading and most renowned supplier of chemicals for the polyurethane industry: Covestro Global Services AG ( part of Bayer)
- More than 30 years experience with PUR give us knowledge of which material properties that can be achieved either with pure polyurethane or in combination with other materials
- Development and production in Norway

– Few days from idea to finished product –

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# NORSElast<sup>®</sup>

Tailormade protection



[www.norselast.com](http://www.norselast.com)

## High performance elastic material

Increase lifetime of equipment and reduce costs increase security for personnel and reduce maintenance

Improve your solutions and protect your equipment from destructive energy by choosing the best elastic material NORSelast®

1. Shock absorption
2. Impact and vibration dampening
3. Bend, stretch and compression restriction
4. Corrosion and abrasion protection

NORSelast supreme properties make it almost indestructible

1. Estimated lifetime -> 70 years in maritime environments
2. Tear strength -> 50 MPa and up to 600% elongation
3. Elastic down to minus 50°C

Examples of applications with NORSelast® are bend restrictors, VIV suppression strakes, pipe clamps, seals, guide rings and other solutions for absorbing unwanted destructive energies.

## Excellent for maritime environments

NORSelast® is a polyether based material system which makes the material excellent for maritime environments. NORSelast® has resilience to hydrolysis which makes it robust to degradation and abrasion in harsh environments with a combination of sea water and strong forces of nature as well as sun light during transport and storage.

## High Flexibility

NORSelast® is a multi component system which makes it possible to produce high quality components with a wide range of different properties as shown with some examples in the following table:

Shore A hardness:	62	69	83	86	87	89	92		DIN 53505
Shore D Hardness:								61	DIN 53505
Tensile strength [MPa]	3,0	32,0	38,6	50	37,9	46,6	43,5	40,7	DIN 53504
Tensile elongation [%]	611	486	475	380	610	477	404	333	DIN 53504
100% Modulus [MPa]	1,0	2,9	5,5	8,6	5,7	8,9	10,4	20,0	DIN 53504
300% Modulus [MPa]	1,1	6,7	12,3	30,7	11,7	18,5	24,1	35,9	DIN 53504
Tear resistance [kN/m]				43	No Value	43	44	No Value	DIN ISO 34-1
Abrasion [mg]	61	47	23	45	17	45	65	44	DIN ISO 4649
22h / 70°C [%]				23	No Value	30	33	No Value	DIN ISO 815-1
72h / 23°C [%]				18	No Value	21	21	No Value	DIN ISO 815-1

## Benefits compared to other materials

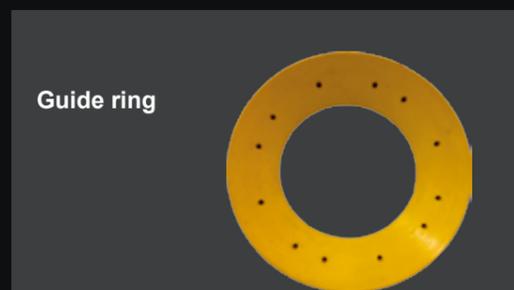
**Rubber** - The load bearing properties of NORSelast® is better than rubber. The tear strength of 50 MPa in combination with a lifetime of 70 years makes NORSelast® a preferred choice in components that will be exposed to extreme strain for a long time.

**POM** - NORSelast® still has elastic properties at hardness up to 80 Shore D and down to minus 50°C which makes it a better choice than POM in many cases.

**Steel** - The abrasion resistance of NORSelast® is much better than even Hardox steel. NORSelast® in combinations with steel or other materials might in many cases result in innovative solutions that expand the lifetime of equipment significantly.



Bend restrictors



Guide ring



Strain relief



RR Hubcap



### NORSelast® - Future protective material

Thimble made of steel can often destroy the surrounding devices, corrode or wear on the rope. Protective properties of NORSelast® solves these problems! NORSelast® have characteristics tailored to maritime environments and can withstand extreme stresses.

We are proud to present one of the market's best polyurethane with tear up to 50 MPa. NORSelast® has simultaneously elastic properties also in low temperatures and allows little influence by salt water.

**NORSelast** has an estimated life of 50-70 years!

