Guidelines
for selecting and packaging products of quality labelled Skrei
- and a few things about the handling onboard

Skrei®
Norwegian Cod in Its Prime

On the darkest nights of the coldest months, armies of small vessels set sail from Norway’s most-northern ports. As generations of fishermen have before them, they brave furious seas in search of the world’s most perfect catch.

Available for only a few short months each year, sustainable, certified Skrei offers the utmost in flavor, quality and prestige.

Learn more at SeafoodFromNorway.com

Intended as an aid to internal training at sea and on land.
By the Norwegian Fishermens’ Sales Organisation in consultation with the Norwegian Seafood Council.
Photo: Jan Brox - unless otherwise specified.

This is the flagship of fresh fish for consumption

- The standard aims at securing high quality products for the consumer
- You shall not gamble on quality measures for this product.
- Have sufficient quality for a 12-day shelf life after packaging.
- Keep focus on the requirements set out in the standard.
- Quality shall be the same every time - thus building confidence among consumers.
- Operators have a large responsibility for keeping up the high quality on products of Skrei.
Responsibilities of the manufacturer

☑ Choice of supplier and marine raw material.
☑ Secure that packaged Skrei products are according to the standard.
☑ Training of personnel engaged in packaging of Skrei is required.
☑ Stop packaging products of Skrei if shelf life can’t be expected to be 12 days according to the standard.

You should not just believe that the quality will be maintained, you must guarantee that it will be. If there is the slightest doubt - pack it as being of neutral cod quality under your own name or brand.

Customer complaints are the responsibility of the manufacturer
There should be no doubt - this one delivers what is promised!

- Fish in pre rigor (stage before rigor mortis)
- Cooled to 0º C - 2º C
- Well bled
- Skrei above 2 kg head and gutted
- Good sheen and fine neck cut
- Straight abdominal cut as far as the anal fin
- Well cleansed of gut
- With quality kept up to 12 days
How to achieve the quality Skrei

The quality Skrei makes demands on the fisherman!

The fish must be bled alive;
– and bleed out in running seawater to remove blood and excrements
– quickly cooled down towards 0°C - 2°C
– and be cooled and kept in precooled cold seawater

The fish must be handled with care;
– avoid pressures and bruising

Without dialogue or agreement beforehand, the fishermen will not be aware of this.
About treatment on board
A sound basis for quality starts with bleeding at sea
And the easiest and best is: the single cut method

Enter the knife through the throat and sufficiently far in to cut the aorta, the main artery from the heart to the gills. This is the surest and easiest way to be certain of cutting a main artery. It is not necessary to cut too deep.

The single cut method is also the method of bleeding that is easiest to control, as you can see that the throat is cut. Good bleeding requires that the fish is bled while alive.

Nothing is more important in ensuring the quality of Skrei than rapid slaughtering and good bleeding. Therefore you should take training, quality control and follow-up seriously.
Good blood drainage, rapid cooling and good cleanliness
Together form the basis for optimal keeping quality.

It is detrimental to keeping quality if fish are left standing in still seawater as shown in the picture. The optimal solution is to let the fish bleed out before placing them in clean, cold seawater (as shown below).

Ensure that the bleeding is carried out correctly and that the fish is bled while alive.

This removes blood and dirt, and avoids the fish lying in water with a concentration of blood at 6-7ºC.

Allow the fish sufficient room. When packed too close together the fish become easily marked, and it is important that the fine looking fish preserve their good appearance.

When delivering gutted fish, the colour of the seawater should look like this.

Fish that have not been gutted keep better in containers that are not overfilled.

1. Bleeding
   - Done correctly
   - Live fish

2. Bleeding
   - In running seawater
   - For approx. 30 minutes

3. Storage/cooling
   In cold seawater with ice at 0ºC
   -2/3 fish in container
   -1/3 seawater

When delivering gutted fish, the colour of the seawater should look like this.
The figure shows clearly the importance of cooling to the quality of shelf life. Keeping fish in seawater is insufficient, as the seawater is not cold enough - even in winter.

Note the enormous effect of reducing the temperature to close to 0°C. (Gives max. lasting quality)

5-10°C is the range of temperature of seawater. At this temperature, decomposition can occur quite rapidly. (Gives very short shelf life)

At 15°C the process of decomposition is extremely rapid. (Gives very short shelf life).

Remember that metabolism and physiological processes in fish occur at temperatures of approx. 5-7°C, i.e. at seawater temperature.

Fig. from Norwegian Ministry of Fisheries. Based on extremely good treatment of marine raw materials!
Temperature is essential for shelf life!

ISKALDE FAKTA

- Rask kjøling eller ising ombord
- Kjøling i mottak og produksjon
- Ubrutt kjølekjede i distribusjon

Gir lengre holdbarhet, mindre svinn og bedre lønnsomhet!

0°C dobler holdbarheten

Oppfatning av kvalitet: Norske forbrukere ser de ikke til kjøpe fisk eldre enn 4 dager.

Oppklæring av kvalitet: Norske forbrukere ser de vil kjøpe 14 dager gammel fisk laget ved 0°C, fordi den smaker godt.

*Oppklæring basert på en undersøkelse av Nofima
How to assess quality

• Cuts and cleaning:
  Fine cut of the neck.
  Straight cut of abdomen as far as the anal fin.
  Well cleansed.

• Blood
  No remnants of blood in neck cut or abdominal cut.
  No bruising.
  Well bled.
3 conditions for assessing good blood drainage

1. **Round, ungutted fish:**
   No blood in the fins and only a few red marks or blood spots in or on the skin.

2. **Gutted and head cut:**
   No blood in the neck meat or abdominal cut.
   Blood veins in the abdomen are drained of blood if the abdominal skin is removed.

3. **Opened fish (Filleted or split):**
   Light, delicate fish meat.
   Blood is not seeping out of the veins or backbone, and the vertebral column appears to be completely drained of blood.
Fresh, but poorly bled fish - and definitely unsuitable for Skrei

Typical characteristics of poorly bled fish:

• red necks
• pectoral fins are red
• abdominal cuts are red
• Bruising can be seen on the skin, which are the result of crushing and rough handling.
Directly gutted fish are not suited for packing as **Skrei**

- Applies to all fish regardless of fishing gear used
- The process of blood drainage is rather inconsistent
- The fish are not bled, but “rinsed out”
- Rigor mortis more rapidly loosens its grip
- Colour changes will occur more rapidly
- Appearance will lose its sheen earlier
- Shelf life can be reduced by 40%, from max. 12 days to approx. 5-6 days
Correct cutting of head

Crushed meat in the neck - reduces shelf life

Clean cut neck - no ruminants of meat or skin from the head

Long neck
Packaging and labelling

Fish destined for Skrei should be cooled down to approximately 0º C as quickly as possible, and be ready for transport within 12 hours after catch!
Packaging

Nice fish - properly iced!
5 cm ice underneath, sufficiently iced necks, and no ice covering the skin.
Ice should only be underneath and by the necks - not covering the skin

- The neck is too close to the sides - leaves not enough room for ice

- Melting ice discolour the skin - fish with blotch marks do not sell so well over the counter.
The fish takes on a rough and not very nice appearance when placed on its side on ice
Control the temperature!

Quality labelled Skrei products should have a temperature as close to 0 degrees C as soon as possible after it is packed!

(not above 2 degrees C when dispatched from cold store)
Fish with instrument marks must not be packed as Skrei.

Note! The arrow-tag is misplaced - it should be along the mid line in front of the dorsal fin!
Placement of tags

The arrow-tag should be along the mid line in front of the dorsal fin – to avoid damaging the fillet!
Special box for large fish. Skrei 6 kg+

Box weighing 12-15 kg.

As long as the fish is in rigor mortis, many biochemical processes are held in check. So remember - do not break curved fish out of rigor mortis!

Either place it in the box as it is or replace it.
Quality-labelled Skrei – ready for its long journey

Secure boxes on pallet. Clearly marked, symmetric, and neatly stacked with cold fish inside.

If the temperature of the fish being packed is high, the ice will quickly melt - the red colour indicates remnants of blood in the fish.
Fresh fillet products of Skrei

Fillet fulfilling the standard for Skrei

Temperature on the marine raw material for fillet and products must be 0-2 degrees C

Foto: Marius Fiskum 2015
Fresh fillet products of Skrei

- The following products can use the quality-label: whole fillet, loins and tails
- The minimum weight of the fish used (head and gutted) must be 2 kg
- Minimum weight for loins and tails are 125 gram
- Ruptures should not be present

Skrei. Examples of minimum weights per filet (J-94-2013: app. 2)

<table>
<thead>
<tr>
<th>Filettype</th>
<th>conversion factor</th>
<th>whole fish (kg)</th>
<th>prod-weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-fillet m/skinn m/bein</td>
<td>2.65</td>
<td>3</td>
<td>0.566</td>
</tr>
<tr>
<td>B-fillet u/skinn u/bein</td>
<td>3.25</td>
<td>3</td>
<td>0.462</td>
</tr>
<tr>
<td>D-fillet m/skinn u/bein u/buklapp (J-kutt)</td>
<td>3.16</td>
<td>3</td>
<td>0.475</td>
</tr>
<tr>
<td>D-fillet u/skinn u/bein u/buklapp (J-kutt)</td>
<td>3.43</td>
<td>3</td>
<td>0.437</td>
</tr>
</tbody>
</table>
Bi products
Liver showing different quality deficiencies

This is good liver:
- Light, fine appearance
- Glossy membrane
- Whole, with no damage
- Firm consistency
- Only few pimply blemishes
- Mild odour

Shelf life for liver is maximum 10 days!
Careful handling gives liver for consumption an optimal shelf life

- Good hygiene
- Rapid cooling
- Avoid squeezing the liver into pieces when weighing and packing - use a knife to avoid damaging of the fatty cells
- Protect the liver from light and air
- Avoid pressure

Early cooling and an unbroken chilly distribution is important!
Row from Skrei

- Firm consistency
- Neutral smell
- Appealing appearance
- Whole, not cut

- Loose consistency
- Pale colour
- Less appealing
- cut

Roe must be stored in clean tubs and protected from sun, wind and frost on board.
Skrei has so much to offer...

Tongue of skrei

Cod stomachs

Cheek

Jaws from cod heads

Foto: Marius Fiskum 2016
# Proposed training plan for involved fishermen and packers

To be closely studied with both fisheremen and employees for each season

<table>
<thead>
<tr>
<th>Must have knowledge of:</th>
<th>Must be able to carry out:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The quality standard for Skrei</td>
<td>1. Organise the work in practice</td>
</tr>
<tr>
<td>2. Who is the responsible Skrei at packing station</td>
<td>2. Work rationally and with care</td>
</tr>
<tr>
<td>3. Why avoid directly gutted fish</td>
<td>3. Select the right quality in accordance with the Standard</td>
</tr>
<tr>
<td>4. Why appearance is so much in focus</td>
<td>4. Have the right amount of ice in the bottom of the box</td>
</tr>
<tr>
<td>5. Why bleeding is so important</td>
<td>5. Lay the fish correctly in the box</td>
</tr>
<tr>
<td>6. What the temperature means in terms of shelf life</td>
<td>6. Ice in the neck and bottom of the box</td>
</tr>
<tr>
<td>7. Why avoid knocks and pressure</td>
<td>7. How to operate tagging equipment</td>
</tr>
<tr>
<td>8. Why not straighten out fish in rigor mortis</td>
<td>8. Operating strapping machine</td>
</tr>
<tr>
<td>10. The fishermens’ role and the need for correction and information</td>
<td>10. Correct placing of boxes on pallett, and labelling and securing</td>
</tr>
<tr>
<td>11. Important hygienic requirements</td>
<td>11. Work cleanly and orderly</td>
</tr>
</tbody>
</table>

The operations manager goes through the regulations, limitations and practical aspects with the operators. It is important to follow up, correct wrong practice and offer encouragement on a regular basis.