

# ARDEX OFF SHORE SYSTEM

Cementitious,
Indoor Floor
Coverings for the
Marine and Offshore Industry







### Offshore approved ARDEX products



### ARDEX A 35 MIX: Pre-Blended Concrete Screed With ARDURAPID effect

- Pre-blended, rapid setting, hardening and drying screeding mortar
- Apply as a bonded screed at a minimum thickness of 20 mm
  Apply as floating screeds at a minimum thickness of 35 mm
- Ready to receive floor coverings after 24 hours regardless of layer thickness
- Walkable in 3 hours



### ARDEX K 55: Ultra Rapid Drying, Self-Levelling Compound with ARDURAPID effect

- Flexible sub-floor smoothing and patching compound
- Ready to receive floor coverings in as little as 1-2 hours
- Priming rarely required for most renovation work
- · Ideal for repairs and renovations



### ARDEX K 15: Self-Levelling Compound with ARDURAPID-Eeffect

- Cementbased smoothing and self-levelling compound and thin screed with ARDURAPID-effect
- Superior flowing characteristics
- Makes surfaces ready to receive floor coverings in one single operation
- Crack-free even in thick layers
- Resistant to rolling loads
- Ideal for pump applications



### ARDEX A 45: Repair Mortar with ARDURAPID effect

- rRpid drying and hardening, slump free mortar
- For filling cracks, surface irregularities and gaps
- Receives finishes after approx. 1 hour regardless of thickness
- Sand can be added



### ARDEX K 70: Coarse-Grained Levelling Compound

- Cement based self-levelling compound and thin-layer screed mortar
- Self-smoothing with optimum flow properties
- For layer thicknesses from 3 mm to 30 mm without addition of sand
- Especially ideal for pump applications



### ARDEX K 80: Fast Drying, Self-Levelling Compound and Thick-Layer Screed Mortar

- Self-Smoothing with Excellent Flow Properties
- For layer thicknesses from 3 to 50 mm
- Ideal for pump application



### ARDEX LM 5 L 2-20: Lightweight levelling compound developed specifically for offshore use

- With a density of only 1 kg per litre ideal for offshore and maritime use
- For layer thicknesses from 2 to 20 mm in a single application
- Walkable in as little as 3 hours. Fully hardened after 24 hours



### ARDEX P 82: Two Component Epoxy Primer and Bonding Agent

- · Forms a bonding layer on smooth and dense substrates
- Solvent-free
- · Replaces neoprene primer
- Easy application
- For internal use



### ARDEX E 25: Flexible Mortar Admix

- Plastification additive for cement-based self-levelling compounds
- Increases the elasticity and the wheeled traffic resistance of the mortar
- Solvent free
- Aqueous synthetic based dispersion



### ARDEX E 90: Acrylic Dispersion

- Mortar admix for ARDEX tile adhesives
- Increases the adhesion and the elasticity of the mortar
- Enhances the water resistance properties
- Aqueous synthetic based dispersion

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## **About ARDEX Offshore System**

ARDEX Skandinavia A/S has provided the marine and offshore market with rapid and safe solutions within cement based internal deck coverings for more than 30 years. The various solutions flooring system solutions are all developed in close co-operation with the users, and are all thoroughly tested on tens of thousands of square metres applied throughout the Nordic countries. The systems shown will meet most requirements for rapid steel deck coverings, whether it concerns repairs or new constructions.

All products have been subjected to all necessary fire tests, and each product carries the appropriate certifica-

tion from Det Norske Veritas (DNV) and the U.S. Coast Guard.

The ARDEX Off Shore System has been expanded and currently consists of five different solutions, where self-smoothing sub-floor levelling compounds are installed in a permanent bond to the steel deck, and one solution where a floating Fire Class A 60 construction is produced by using ARDEX A 35 MIX - thus ensuring that the floor screed may be applied at a thickness between 1 mm to 50 mm in one operation. This gives the user a wide variety of flooring systems to choose from when searching for the optimum solution to any given flooring requirement.



For all solutions there can be installed rubber or vinyl coverings by using the offshore approved covering adhesive ARDEX PREMIUM AF 2100.

The combination ARDEX A 45 added ARDEX E 90 and mixed with Hyperlite produces a flexible low-weight mortar that is ideal for repairing and for applications at thicknesses between 5 - 50 mm. Regardless of the layer thickness, this system will be ready to receive floor coverings after 24 hours, incl. application of the final smoothing layer using ARDEX K 15.

ARDEX K 15 added ARDEX E 25 produces an elastic sub-floor levelling compound that is wear resistant. For more than 30 years, ARDEX K 15 has allowed successful installation over steel decks at thicknesses from 0 mm to 10 mm. ARDEX K 15 is ready to receive floor-coverings after 24 hours.

For areas where rapid drying is essential, we recommend ARDEX K 55 self-levelling compound which allows dense floor-coverings to be installed in as little as 1 - 2 hours. ARDEX K 55 can be applied from 0 - 10 mm in thickness, has floating properties that easily compare to those of ARDEX K 15 and does not require incorporation of ARDEX E 25.

For thick applications, we recommend ARDEX K 70 added ARDEX E 25. ARDEX K 70 can be applied from 3 mm to 30 mm in thickness and can receive floor-coverings within 24 hours, regardless of the layer thickness. For layer thicknesses beyond this range, we recommend ARDEX K 80 which can be applied from 3 - 50 mm.

Where comfort requirements such as sound reduction, heat insulation or merely soft flooring must be satisfied, the solution is ARDEX A 35 MIX laid onto Rockwool fire slabs in a so-called Fire Class A 60 construction. The total construction thickness will hereby be reduced to

70 mm, consisting of 30 mm insulation and 40 mm ARDEX A 35 MIX.

The contact to our users is vital for the development of new systems. We always welcome recommendations for new constructions or improvements of existing solutions, thus ensuring that our solutions will always meet the immediate demands of the market.

We are, therefore, happy to get any recommendations or comments that you may have.

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## **Application**

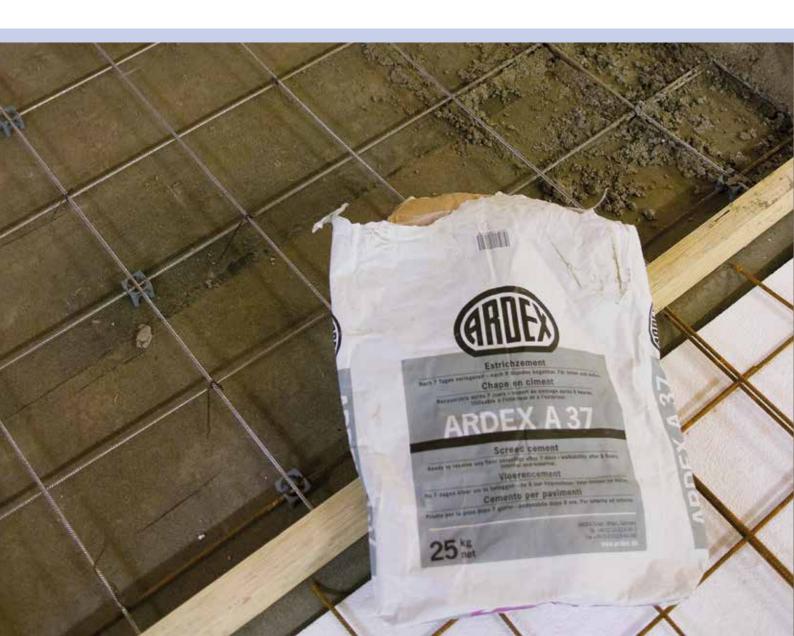
ARDEX Off Shore Systems are ideal for new constructions, renovations and repairs onboard ships, drilling rigs, container modules etc., where time is a crucial factor.

ARDEX Off Shore Systems are intended for applications onto surfaces such as: Steel, aluminium, screeds, concrete and existing tiles, provided that the below conditions are satisfied:

### **Sub-Floor Preparation**

Please note that the ARDEX Off Shore Systems must always be installed in strict compliance with the ARDEX installation instructions as all certificates and fire tests are subject to a correct powder-to-water-mixing- ratio. Same applies to the addition of admixes and aggregates, if any. If overwatering occurs, the hardening times and strengths of the material will be affected, which will lead to a poorer final result of the application.

All technical product data on primers, cement based products and covering adhesives are dependent on subfloor and room temperatures from +18 - 20 °C, and a relative humidity of app. 50 % RH. Any deviation will shorten or extend the working and hardening times, thereby deferring the time at which the sub-floor can be given the finishing treatment.



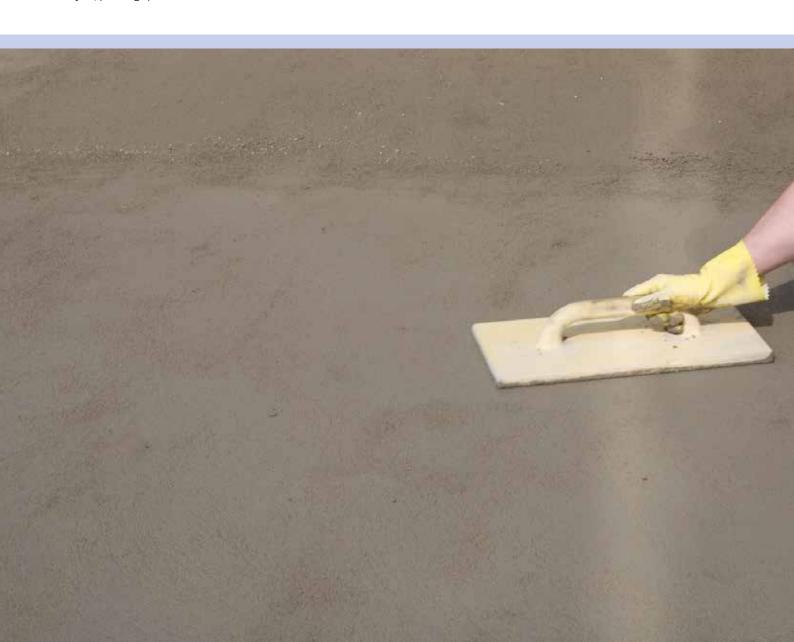
The sub-floor, viz. steel or any other material, must be cleaned thoroughly. Dirt and similar contaminating sub-stances must be removed. Sub-floors that may oxidize or become rusty, e.g. steel and aluminium, must always be treated with an anti-corrosive coating to efficiently protect the moisture sensitive sub-floor prior to the installation of the ARDEX Off Shore System. As ARDEX does not manufacture or promote any anti-corrosive paints, such will not fall within our sphere of responsibility. A supplier of such products should therefore be contacted.

With our ARDEX Off Shore System we want to show our commitment to the build-up of quality constructions no regardless of the location per site. We offer product and hands-on schooling and training throughout the entire year, providing up-to-date technical information and instal-

lation techniques that are foremost in keeping contractors' skills competent. Courses will be held at our schooling and training facilities in Hedensted and Herlev (Denmark), as required.

Our technicians and consultants are always at your disposal for further information about our Off Shore Programme.

Please attend our home page www.ardex.dk for updated offshore certificates and further information.



### Lightweight ARDEX A 45 + ARDEX E 90 Added Hyperlite

Owing to a low weight, this construction is especially suitable for greater application thicknesses, e.g. in accommodations modules, cabins and the like, prior to the application of new floor coverings.

This construction type is also ideal for bathrooms, showers and washrooms, where a drainage slope is to be created prior to the application of a waterproofing compound.

### **Application**

The steel deck must be efficiently protected with an anti-

corrosive coating.

Prime with ARDEX P 82. The drying time is approx. 1 hour. Coverage approx. 200 g/m².

This surface is installed by using ARDEX A 45 mixed with Hyperlite and added ARDEX E 90 and is walkable in as little as approx. 30 min.

ARDEX A 45 is mixed in a 75 litre mixing bucket in the following order:



- · 5.5 litres of water
- 2.5 litres of ARDEX E 90
- 25 kg ARDEX A 45 (equivalent to 15.6 litres by volume)
- 15.6 litres of siliconized Hyperlite (grain size 0.5-6 mm). Density approx. 150 kg/m³.

ARDEX E 90 diluted with clean cold water is mixed with Hyperlite. Then add the ARDEX A 45 powder whilst stirring vigorously until a lump free mortar is produced. The mortar is workable for approx. 15 minutes at 20 °C. Apply the mixed mortar onto screed battens by using a screed bar to pre-level the subfloor. A final smoothing layer can be installed after 1 hour.

Table 1:

Layer thickness	10 mm per m²	15 mm per m²	20 mm per m²	30 mm per m²	40 mm per m²	50 mm per m²
ARDEX P 82	0.2 kg					
Pre- levelling	12.0 kg	18.0 kg	24.0 kg	36.0 kg	48.0 kg	80.0 kg
ARDEX P 82	0.2 kg					
Top layer (3 mm)	5.7 kg					
ARDEX AF 2100	0.3 kg					
Total relative density	18.4 kg	24.4 kg	30.4 kg	42.4 kg	54.4 kg	66.4 kg

Table 2:

Layer thickness	10 mm per m²	15 mm per m²	20 mm per m²	30 mm per m²	40 mm per m²	50 mm per m²
ARDEX P 82	0.2 kg					
ARDEX A 45	8.30 kg	12.50 kg	16.70 kg	25.00 kg	33.32 kg	41.65 kg
Perlite	0.8 kg	1.2 kg	1.5 kg	2.3 kg	3.1 kg	3.9 kg
ARDEX E 90	0.83 kg	1.25 kg	1.66 kg	2.49 kg	3.32 kg	4.15 kg
Total relative density	13,60 kg	18,65 kg	23,55 kg	33,50 kg	43,40 kg	53,40 kg

Table 3:

Layer thickness	1 mm per m²	2 mm per m²	3 mm per m²	4 mm per m²	5 mm per m²	10 mm per m²
ARDEX K 15	1.4 kg	2.8 kg	4.2 kg	5.6 kg	7.0 kg	14.0 kg
ARDEX E 25	0.12 kg	0.24 kg	0.36 kg	0.48 kg	0.60 kg	1.20 kg
Total relative density	1.52 kg	3.04 kg	4.56 kg	6.08 kg	7.60 kg	15.20 kg

When installing ARDEX K 55, do not incorporate ARDEX E 25. The coverage is approx. 1.5 kg/mm/m $^2$ .

As a final top smoothing layer we recommend ARDEX K 15 + ARDEX E 25. One bag of 25 kg ARDEX K 15 is mixed with approx. 5.25 litres of clean cold water and 2 litres of ARDEX E 25 whilst stirring vigorously until a lump-free self-smoothing mortar is produced. The working time of the mortar is approx. 30 min. at 20 °C. The self-smoothing levelling compound will be walkable in 2 hours and ready to receive floor-coverings within 24 hours.

For small areas, or in case of time pressure, we recommend ARDEX A 45 + ARDEX E 25. For each bag of 25 kg ARDEX A 45, add approx. 4.75 litres of water and 1.75 litres of ARDEX E 25. Mix thoroughly to obtain a lump-free fluid consistency. The mixed mortar has a working time of approx. 15 min. ARDEX A 45 is ready to receive floor coverings in only 1 hour. For large areas under time pressure, we recommend ARDEX K 55 as a final smoothing layer. ARDEX K 55 is a self-levelling sub-floor smoothing compound that will be ready to receive floor coverings in 1 to 2 hours. Where the installation of the final smoothing layer is delayed for longer than 2 hours (or where the surface is completely dry), the pre-levelling layer must be primed with 1 part ARDEX P 51 diluted with 3 parts water (drying time 3 to 6 hours) or with ARDEX P 82 (drying time 1 hour).

\*Rubber or vinyl coverings are installed using ARDEX PREMIUM AF 2100 adhesive on top of all recommended levelling compounds.

### **Relative density**

The relative density of the pre-levelling layer is approx. 1.2 kg per mm/m², and the relative density of the final smoothing layer is approx. 1.7 kg per mm/m². The total relative density of a standard construction, as described under "Application", is shown in Table 1. The average total relative density will be approx 1.23 kg per mm/m². It is hereby assumed that the pre-levelling layer will have a thickness of 30 mm, and the final smoothing layer a thickness of 3 mm. If the thickness of the pre-levelling layer is greater, the average relative density will be reduced.

### ARDEX TIME:

A construction consisting of ARDEX A 45 mixed with Hyperlite and ARDEX E 90, including a top layer, can receive dense floor coverings in:

Small areas:

ARDEX P 82:

1 hour

ARDEX A 45 + Hyperlite and ARDEX E 90 can be walked on after: **1 hour** 

A top layer of ARDEX A 45 added
ARDEX E 25 will be ready to receive
floor-covering in: **1 hour** 

Total ARDEX time: 3 hours

Large areas:

ARDEX P 82

1 hour

ARDEX A 45 + Hyperlite and ARDEX E 90 can be walked on after: **1 hour** 

A top layer of ARDEX K 15 added
ARDEX E 25 will be ready to receive
floor-covering in: **24 hours** 

Total ARDEX time: 26 hours

Wet rooms

ARDEX A 45 added Hyperlite and
ARDEX E 90 can be walked on
after:

1 hour

Top coat of ARDEX A 45 added

ARDEX E 25 will be ready to receive floor-covering in: 1 hour

ARDEX 8+9 first coat,

drying time:

1 hour

ARDEX 8+9 second coat,

drying time:

2 hours

ARDEX X 77 S tile adhesive,

hardening time: 1½ hour

ARDEX GK grouting compound,

hardening time:

11/2 hour

Total ARDEX time:

8 hours

### **Alternatives**

ARDEX A 45 + Hyperlite can be smoothed by using any certified ARDEX self-smoothing levelling compound. However, the resilience of the construction should always be taken into consideration when deciding whether or not to use ARDEX K 55 as a final smoothing layer. The hardening and drying times of the specific self-smoothing levelling compound determine when the floor covering can be installed.

### Tile fixing

ARDEX A 8 + 9 can also be applied as a waterproof coat over ARDEX A 45 + Hyperlite prior to tiling with ARDEX X 77 or ARDEX X 77 S (rapid setting). Tiles can be grouted with ARDEX G8S FLEX, ARDEX G7N FLEX or ARDEX GK. For kitchen areas and toilets we recommend ARDEX WA

as a chemical resistant grout

### **Additional information**

The hardening and drying times showed depend on normal temperatures (approx. 20 °C) and a relative humidity of approx. 50 % RF. Lower temperatures and a higher air humidity will lengthen the drying time.

Levelling and tiling of steel deck surfaces will require that the steel sub-floor is sufficiently rigid to avoid cracks in the tiling owing to movements and deflections in the steel deck.

**Note:** We point out that fire tests have not been conducted and that no certifications have been obtained for the tile adhesives and the tile grouts, as this is not usually required by the authorities.



### ARDEX K 15 + ARDEX E 25

ARDEX K 15 in conjunction with ARDEX E 25 is especially suitable for levelling of steel deck surfaces and can be applied at thicknesses from 0 - 10 mm, owing to the enhanced flexibility of the levelling compound layer. ARDEX K 15 can be walked on after approx. 2 hours and can be used as an underlayment for all types of floor-coverings. Dense floor-coverings can easily be installed after 24 hours.

### **Application**

- The steel deck must be efficiently protected by applying an anti-corrosive coat.
- 2. Prime with ARDEX P 82. Drying time 1 hour. Coverage

- approx. 200 g/m<sup>2</sup>.
- 3. Allow primer to dry before applying ARDEX K 15 added ARDEX E 25 at a thickness up to 10 mm. For each bag of 25 kg ARDEX K 15 add 5.25 litres of water mixed with 2 litres of ARDEX E 25. For large areas, it may be advantageous to use a large ARDEX 75 litre mixing bucket and a cart for mixing bucket (75 kg ARDEX K 15 mixed with 15.75 litres of water and 6 kg of ARDEX E 25).
- With ARDEX PREMIUM AF 2100 any dense floor-covering can be installed 24 hours after the application of ARDEX K 15 self-smoothing levelling compound.



A construction consisting of ARDEX K 15 mixed with 5.25 litres of water and 2 litres of ARDEX E 25 will require the following hardening and drying times before it can receive dense floor coverings:

ARDEX K 15 + ARDEX E 25, priming with ARDEX P 82,

drying time: 1 hour

A top coat of ARDEX K 15 + ARDEX E 25, ready to receive

floor-covering in: 24 hours

Total ARDEX time: 25 hours

Tiling, wet rooms:

Priming with ARDEX P 82: 1 hour

Levelling with ARDEX K 15

+ ARDEX E 25 drying time: **24 hours** 

ARDEX 8+9 first coat,

drying time: 1 hour

ARDEX 8+9 second coat,

drying time: 2 hours

ARDEX X 77 S tile adhesive,

hardening time: 1½ hour

ARDEX G8S FLEX or ARDEX GK grouting compound.

hardening time: 1½ hour

Total ARDEX time: 31 hours

### **Density**

The relative density of the ARDEX K 15 levelling compound layer is approx 1.8 kg/mm/m². When applied onto a non-absorbent sub-floor, ARDEX K 15 should always be laid at a thickness of at least 1.5 mm, to ensure the drying and hardening of the water-based flooring adhesive used to install the floor-covering. When priming with ARDEX P 82, the relative density of the underlayment will be as follows:

Layer thickness	2 mm per m²	3 mm per m²	4 mm per m²	5 mm per m²	10 mm per m²
ARDEX P 82	0.2 kg				
ARDEX K 15 + ARDEX E 25	3.6 kg	5.4 kg	7.2 kg	9.0 kg	18.0 kg
ARDEX AF 2100	0.3 kg				
Total relative density	4.1 kg	5.9 kg	7.7 kg	9.5 kg	18.5 kg

### Coverage per m<sup>2</sup>

The coverage of ARDEX K 15 is approx. 1.4 kg powder/mm/m² which gives the following material consumption:

### **Alternatives**

Layer thickness	2 mm per m²	3 mm per m²	4 mm per m²	5 mm per m²	10 mm per m²
ARDEX P 82	0.2 kg				
ARDEX K 15	2.8 kg	4.2 kg	5.6 kg	7.0 kg	14.0 kg
ARDEX E 25	0.24 kg	0.36 kg	0.48 kg	0.60 kg	1.20 kg
ARDEX AF 2100	0.3 kg				

### ARDEX K 15 lightweight:

Where a low weight is required, a lightweight additive (Poraver 0.25 - 0.5 mm) may be incorporated into ARDEX K 15, thereby reducing the relative density from 1.8 kg/mm/m<sup>2</sup> to approx. 1.1 kg/mm/m<sup>2</sup>.

Mix a bag of 25 kg ARDEX K 15 with 4 litres of clean cold water and 4 litres of ARDEX E 25, and then add 15.6 litres of Poraver (0.25 - 0.50 mm) whilst stirring thoroughly. 50 kg ARDEX K 15 mixed with 8 litres of water and 8 litres of ARDEX E 25 in a 75 litre mixing bucket will require incorpo-

ration of 31.2 litres of Poraver. That is the approximate equivalent of one heaped 30 I ARDEX bucket.

### ARDEX K 15 with drainage slope

A drainage slope can be created in showers and bathrooms by using ARDEX K 15 with a reduced water volume. A bag of 25 kg ARDEX K 15 is mixed with 4.6 litres of water. The levelling compound is poured along the wall edges of the base area and will freely flow towards the drain assembly at a gradient of about 1 cm per meter.

### Tile fixing

Tiles are installed using ARDEX X 77, ARDEX X 77 S or ARDEX S 48. Apply ARDEX 8+9 waterproof coating prior to tiling in wet rooms. For grouting we recommend ARDEX G8S FLEX, ARDEX G7N FLEX or ARDEX GK. If using moisture-sensitive natural stones, please contact ARDEX Technical Services for instructions.

### **Additional information**

The above hardening and drying times depend on normal temperatures (approx. 20 °C) and a relative humidity of approx. 50 % RH. Lower temperatures and a higher ambient humidity will extend the drying time.

Levelling and tiling of steel deck surfaces require that the steel sub-floor is sufficiently rigid in order to avoid cracks in the tiling, caused by movements and deflections in the steel deck.

**Note:** We point out that fire tests have not been conducted and that no certifications have been obtained for the tile adhesives and the tile grouts, as this is not usually required by the authorities.

### ARDEX K 55: Ready for Floor Coverings in 3 Hours

ARDEX K 55 is a sub-floor smoothing and patching compound with rapid drying and exceptional flow properties for levelling and smoothing of large areas of steel deck surfaces where coverings must be installed in as little as 1 - 2 hours. ARDEX K 55 is designed for applications from 0 - 10 mm and can be walked on and receive floor coverings in as little as 2 hours. ARDEX K 55 is suitable as an underlayment for all types of floor coverings.

### **Application**

 The steel deck must be efficiently protected using an anti-corrosive coating.

- Prime with ARDEX P 82. Drying time is 1 hour.
   Coverage approx. 200 g/m².
- Allow the primer to dry before applying ARDEX K 55 at a thickness from 0 to 10 mm. Mix 25 kg ARDEX K 55 with approx. 6.5 litres of clean cold water whilst stirring thoroughly until a lump-free mortar is produced.

### **Relative Density**

The relative density of the ARDEX K 55 mortar is approx. 1.9 kg/mm/m<sup>2</sup>. The ARDEX K 55 smoothing compound should always be laid at a thickness of at least 1.5 mm onto a non-absorbent subfloor to ensure that a water-



A construction consisting of ARDEX K 55 mixed with 6.5 litres of water can be walked on after 1 to 2 hours, and will subsequently be ready to receive dense floor coverings:

Priming with ARDEX P 82, drying time: **1 hour** 

A top coat of ARDEX K 55, drying time 1-2 hour(s): **2 hours** 

Total ARDEX time: 3 hours

based flooring adhesive applied subsequently to install floor covering will dry and harden sufficiently.

When priming with ARDEX P 82, the relative density of the sub-floor will be as follows:

Layer thickness	2 mm per m²	5 mm per m²	10 mm per m²
ARDEX P 82	0.2 kg/ m <sup>2</sup>	0.2 kg/ m <sup>2</sup>	0.2 kg/ m <sup>2</sup>
ARDEX K 55	3.8 kg/ m <sup>2</sup>	9.0 kg/ m <sup>2</sup>	18.0 kg/ m <sup>2</sup>
ARDEX AF 2100	0.3 kg	0.3 kg	0.3 kg
Samlet vægt	4.3 kg/ m <sup>2</sup>	9.5 kg/ m <sup>2</sup>	18.5 kg/ m <sup>2</sup>

### Coverage per m<sup>2</sup>

The coverage of ARDEX K 55 is approx. 1.5 kg/mm/m<sup>2</sup> of layer thickness, viz.:

Layer thickness	2 mm per m²	3 mm per m²	4 mm per m²	5 mm per m²	10 mm per m²
ARDEX P 82	0.2 kg				
ARDEX K 55	3.0 kg	4.5 kg	6.0 kg	7.5 kg	15.0 kg
ARDEX AF 2100	0.3 kg				

### **Additional information**

The hardening and drying times showed are subject to normal temperatures (approx. 20 °C) and a relative humidity of approx. 50 % RH. Lower temperatures and a higher relative humidity of the air will extend the drying time.

The levelling and tiling of steel deck surfaces will require that the steel sub-floor is sufficiently rigid to prevent tiles from cracking owing to movements and deflections in the steel deck.

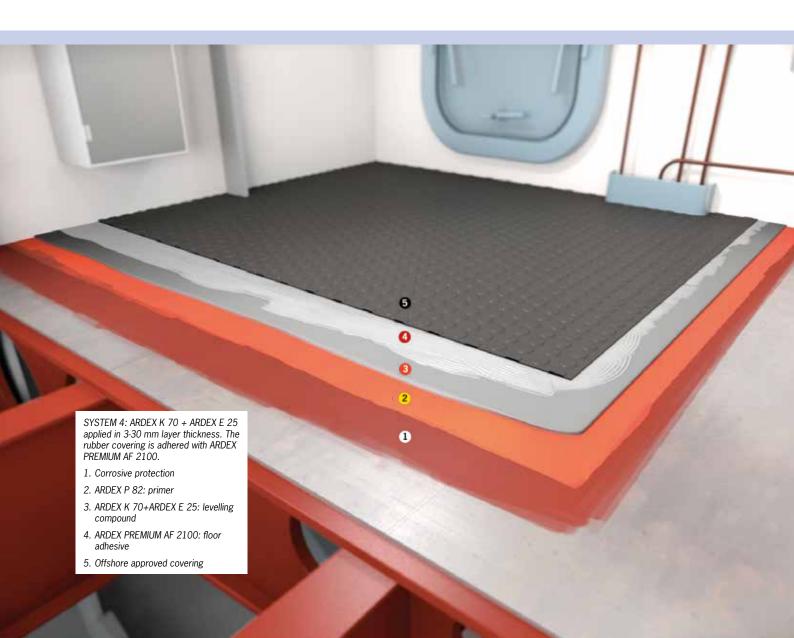
**Note:** We point out that fire tests have not been conducted and that no certifications have been obtained for the tile adhesives and the tile grouts, as this is not usually required by the authorities.

### ARDEX K 70 + ARDEX E 25: Levelling for Thick Layers

ARDEX K 70 added ARDEX E 25 hardener is ideal for levelling and smoothing of steel decks and can be applied from 3 mm to 30 mm in thickness in one operation. ARDEX K 70 is walkable in only 2 hours, and is suitable as a finished underlayment for most floor coverings. Dense floor-coverings can be installed after 24 hours.

### **Application**

- The steel deck must be efficiently protected with an anti-corrosive coating.
- Prime with ARDEX P 82. Drying time is 1 hour.
   Coverage approx. 200 g/m².
- 3. Allow the primer to dry before applying the ARDEX K 70 motar added ARDEX E 25 in a layer of up to 30 cm thick. A 25 kg bag of ARDEX K 70 is mixed with 4.0 litres of clean cold water and 1.75 litres of ARDEX E 25. Where large sub-floors require smoothing with ARDEX K 70, it may be advantageous to use an ARDEX 75 litre mixing bucket and a cart (75 kg of ARDEX K 70 mixed with 12 litres of water and 5.25 litres of ARDEX E 25). When applying ARDEX K 70 added ARDEX E 25 at great thicknesses, 1/3 part of grain size 0 4 mm sand aggregate can be incorporated into the mortar, provided that there are no maximum weight require-



A construction consisting of ARDEX K 70 mixed with 4.0 litres of water and 1.75 litres of ARDEX E 25 will require the following hardening and drying times before it can receive dense floor coverings:

ARDEX K 70 + ARDEX E 25, priming with ARDEX P 82, drying time: **1 hour** 

A top coat of ARDEX K 70 +
ARDEX E 25. Ready to receive
floor-covering in: 24 hours

Total ARDEX time: 25 hours

Tiling, wet rooms:

ARDEX 8+9 first coat,
drying time 1 hour

ARDEX 8+9 second coat, drying time: **2 hours** 

ARDEX X 77 S tile adhesive, hardening time: 1½ hours

ARDEX G8S FLEX or GK grouting compound.

hardening time: 1½ hours

Total ARDEX time: 6 hours

ments that must be met.

 With ARDEX PREMIUM AF 2100 any dense floor-covering can be installed 24 hours after the application of ARDEX K 70.

### **Density**

The density of the ARDEX K 70 mortar is approx 2.0 kg/mm/m². When priming with ARDEX P 82, the density will

2 mm per m²	5 mm per m²	10 mm per m²
0.2 kg	0.2 kg	0.2 kg
4.0 kg	10.0 kg	20.0 kg
0.3 kg	0.3 kg	0.3 kg
4.5 kg	10.5 kg	20.5 kg
	9 per m <sup>2</sup> 0.2 kg 4.0 kg 0.3 kg	per m²         per m²           0.2 kg         0.2 kg           4.0 kg         10.0 kg           0.3 kg         0.3 kg

require that the steel sub-floor is sufficiently rigid in order to avoid cracks in the tiling, caused by movements and deflections in the steel deck.

**Note:** We point out that fire tests have not been conducted and that no certifications have been obtained for the tile adhesives and the tile grouts, as this is not usually required by the authorities.

### Coverage per m<sup>2</sup>

The coverage of ARDEX K 70 is approx 1.7 kg powder per mm/m<sup>2</sup> which gives the following material consump-

tion: Layer thick- ness	2 mm per m²	3 mm per m²	4 mm per m²	5 mm per m²	10 mm per m²
ARDEX P 82	0.20 kg				
ARDEX K 70	3.40 kg	5.10 kg	6.80 kg	8.50 kg	17.00 kg
ARDEX E 25	0.24 kg	0.36 kg	0.48 kg	0.60 kg	1.20 kg
ARDEX AF 2100	0.3 kg				

### **Alternatives**

### **Tile Fixing**

Tiles are installed using ARDEX X 77, ARDEX X 77 S or ARDEX S 48. ARDEX 8+9 waterproof coating is applied prior to tiling in wet rooms. As grouting compound we recommend ARDEX G8S FLEX, G7N FLEX or ARDEX GK. When using moisture sensitive natural stones, please contact ARDEX Technical Services for instructions.

### **Additional information**

The above hardening and drying times are dependent upon normal temperatures (approx. 20 °C) and a relative humidity of approx. 50 % RH. Lower temperatures and a higher humidity will extend the drying time.

Levelling, smoothing and tiling of steel deck surfaces

### **ARDEX K 80: Levelling for Thick Layers**

By using ARDEX K 80 you save to admix ARDEX E 25 hardener as this is already added to the ARDEX K 80 powder. This makes ARDEX K 80 very suitable for pumping onto large areas. ARDEX K 80 can be applied from 3 - 50 mm in one operation. ARDEX K 80 is walkable in only 2 hours and are suitable for most floor coverings. In layers up to 10 mm dense floor coverings can be installed after 24 hours. In 30 mm layers after 3 days and in 50 mm after 7 days.

### **Application**

1. The steel deck must be efficiently protected with an

anti-corrosive coating.

- Prime with ARDEX P 82. Drying time is 1 hour.
   Coverage approx. 200 g/m².
- Allow the primer to dry before applying the ARDEX K 80 mortar. A 25 kg bag of ARDEX K 80 is mixed with 4,75
   5,0 I of clear, cold water. Where large subfloors require smoothing with ARDEX K 80 we recommend use of ARDEX 75 liter bucket and a cart (75 kg ARDEX K 80 mixed with 15 liter of water). By pumping please use the ARDEX floating measurements for correct water amount.
- 4. With ARDEX PREMIUM AF 2100 any dense floor-cover-



A construction consisting of ARDEX K 80 will require the following hardening and drying times before it can receive dense floor coverings:

### ARDEX K 80

Priming with ARDEX P 82, drying time: **1 hour** 

A top coat of of ARDEX K 80, Ready to receive floor-covering in: **24 hours** 

Total ARDEX time: 25 hours

Tiling, wet rooms: ARDEX 8+9 first coat, drying time:

1 hour

ARDEX 8+9 second coat, drying time: **2 hours** 

ARDEX X 77 S tile adhesive, hardening time: 1½ hour

ARDEX G8S FLEX eller
ARDEX GK grouting compound,
hardening time: 1½ hour

Total ARDEX time: 6 hours

ing can be installed 24 hours after the application of ARDEX K 80.

### **Density**

The density of the ARDEX K 80 mortar is approx 2.0 kg/mm/m<sup>2</sup>. When priming with ARDEX P 82, the density will be as follows:

Layer thick- ness	3 mm per m²			20 mm per m²			
ARDEX P 82	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg
ARDEX K 80	6 kg	10 kg	20 kg	40 kg	60 kg	80 kg	100 kg
ARDEX AF 2100	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg
Total den- sity*	6.5 kg	10.5 kg	20.5 kg	40.5 kg	60.5 kg	80.5 kg	100.5 kg

<sup>\*</sup>exclusive topcoat

### Coverage per m<sup>2</sup>

The coverage of ARDEX K 80 is approx 1.7 kg powder per mm/m<sup>2</sup> which gives the following material consumption:

Layer thickness	2 mm pr. m²	3 mm pr. m²	4 mm pr. m²	5 mm pr. m²	10 mm pr. m²
ARDEX P 82	0.20 kg				
ARDEX K 80	3.30 kg	5.00 kg	6.60 kg	8.25 kg	16.50 kg
ARDEX E 25	0.24 kg	0.36 kg	0.48 kg	0.60 kg	1.20 kg
ARDEX AF 2100	0.3 kg				

### **Alternatives**

### Tile Fixing

Tiles are installed using ARDEX X 77, ARDEX X 77 S or ARDEX S 48. ARDEX 8+9 waterproof coating is applied prior to tiling in wet rooms. As grouting compound we recommend ARDEX G8S FLEX, G7N FLEX or ARDEX GK. When using moisture sensitive natural stones, please contact ARDEX Technical Services for instructions.

### **Additional information**

The above hardening and drying times are dependent upon normal temperatures (approx. 20 °C) and a relative

humidity of approx. 50 % RH. Lower temperatures and a higher humidity will extend the drying time.

Levelling, smoothing and tilling of steel deck surfaces require that the steel sub-floor is sufficiently rigid in order to avoid cracks in the tilling, caused by movements and deflections in the steel deck.

**Note:** We point out that fire tests have not been conducted and that no certifications have been obtained for the tile adhesives and the tile grouts, as this is not usually required by the authorities.

## ARDEX LM 5 L 2-20: Lightweight levelling compound developed specifically for offshore use

With a density of only 1 kg per litre ARDEX LM 5 L 2-20 is ideal for offshore and maritime use, where the combined weight of the flooring installation has always been an issue. This system allows the use of your finished load capacity on things other than the flooring.

ARDEX LM 5 L 2-20 is specifically designed to comply with the ever-increasing demands for flexibility and adhesion, which is a requirement in the offshore and maritime industries.

ARDEX LM 5 L 2-20 is self-levelling and can be applied in thicknesses from 2 up to 20 mm in a single application. Walkable in as little as 3 hours, ARDEX LM 5 L 2-20 is fully hardened after 24 hours, when the final floorcovering can be installed.

### **Application**

- The steel deck must be efficiently protected with an anticorrosive coating.
- Prime with ARDEX P 82. The drying time is approx. 1 hour in good conditions. Coverage is approx. 200 g/m².



A construction consisting of ARDEX LM 5 L 2-20 will require the following hardening and drying times before it can receive dense floor coverings:

### ARDEX LM 5 L 2-20

Priming with ARDEX P 82, drying time: **1 hour** 

A top coat of of ARDEX LM 5 L 2-20, Ready to receive floorcovering in: **24 hours** 

Total ARDEX time: 25 hours

Tiling, wet rooms:
ARDEX 8+9 first coat,

drying time: **1 hour** ARDEX 8+9 second coat,

drying time: 2 hours

ARDEX X 77 S tile adhesive, hardening time: 1½ hour

ARDEX G8S FLEX or
ARDEX GK grouting compound,
hardening time: 1½ hour

Total ARDEX time: 6 hours

- When the primer is dry ARDEX LM 5 L can be applied up to 20 mm thick.
- 4. ARDEX LM 5 L 2-20 is supplied in units that consist of 15 kg bags of powder and 7.8 kg of polymer dispersion liquid, which are mixed together in a 30 litre bucket. When doing larger areas it can be advantageous to use a 75 litre mixing vessel and a cart. No additional water should be added!
- After mixing, ARDEX LM 5 L 2-20 is poured on to the prepared subfloor and finished with a steel trowel.
   ARDEX LM 5 L 2-20 will flow out and create a smooth surface.
- The floorcovering can be installed after 24 hours, using ARDEX AF 2100.

### **Density**

The density of ARDEX LM 5 L 2-20 is approximately 1.0 kg per litre. When priming with ARDEX P 82 prior to application the density will be as follows:

Layer thickness			4 mm per m²				
ARDEX P 82	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg
ARDEX LM 5 L	2.0 kg	3.0 kg	4.0 kg	5.0 kg	10 kg	15 kg	20 kg
ARDEX AF 2100	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg
Total density	2.5 kg	3.5 kg	4.5 kg	5.5 kg	10.5 kg	15.5 kg	20.5 kg

<sup>\*</sup>exclusive top coat

## Coverage per m<sup>2</sup>

The coverage of ARDEX LM 5 L 2-20 is approx. 1.1~kg powder per mm/m², which gives the following material consumption:

Layer thickness	2 mm per m²						
ARDEX P 82	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg	0.2 kg
ARDEX LM 5 L	2.2 kg	3.3 kg	4.4 kg	5.5 kg	11 kg	16.5 kg	22 kg
ARDEX AF 2100	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg	0.3 kg

### **Alternatives**

Tile Fixing: Tiles can be installed using ARDEX X 77,

ARDEX X 77 S or ARDEX S 48.

**Waterproofing:** ARDEX 8+9 waterproof coating is applied prior to tiling in wet rooms. For grouting we recommend ARDEX G8S FLEX, ARDEX G7N FLEX or ARDEX GK

Note: When using moisture sensitive natural stones, please contact ARDEX Technical Services for advice.

### **Additional information**

The quoted hardening and drying times are dependent upon normal temperatures (approx. 20 °C) and a relative humidity of approx. 50 % RH. Lower temperatures and a higher humidity will extend the drying time.

Levelling, smoothing and tiling of steel deck surfaces require that the steel sub floor is sufficiently rigid in order to avoid cracks in the tiling, caused by movements and deflections in the steel deck.

**Note:** Fire tests have not been conducted, and no certification has been obtained for the tile adhesives and tile grouts, as this is not usually required by the authorities.

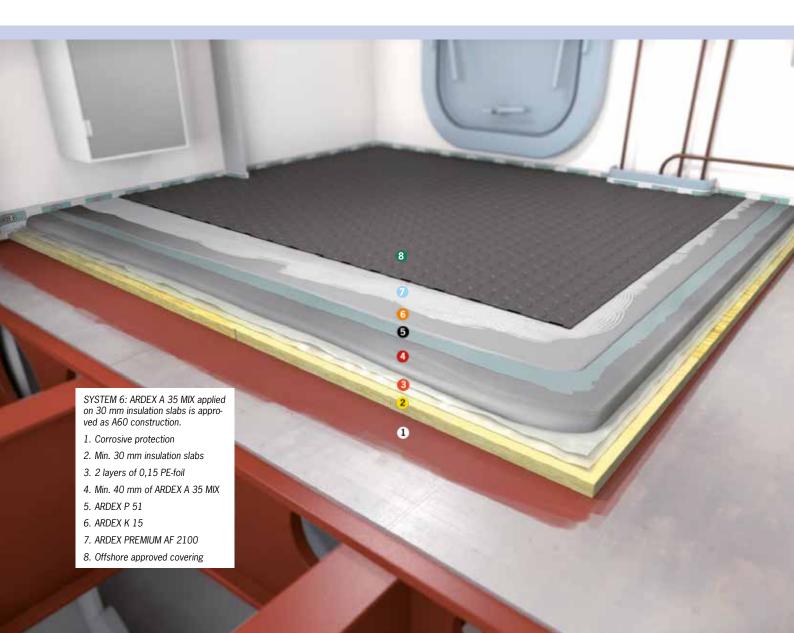
### ARDEX A 35 MIX on Fire Slabs (Fire Class A 60 Construction)

Whether on a cruise ship or on an oil rig, the emphasis will often be on enhanced comfort as far as sound reduction and heat insulation of the living-quarters and cabins located above the engine rooms etc. are concerned.

ARDEX A 35 MIX provides an extremely suitable and rapid solution to this requirement, as the incorporation of special cements with high strengths into the ARDEX A 35 powder makes it possible to reduce the thickness of the floating concrete slab to 40 mm. As a result here of, the total thickness of the sub-floor can be reduced from ap-

prox. 100 mm to 70 mm (40 mm ARDEX A 35 MIX mortar and 30 mm insulation slabs).

Owing to the reduced height of the construction, the weight of this solution will obviously be somewhat lower than that of a traditional built-up. The most important features of the ARDEX A 35 MIX construction are, however, still the rapid hardening and drying times which allow the installation of dense floor-coverings in as little as 24 hours.



A construction consisting of ARDEX K 55, ARDEX P 82 and ARDEX K 55 is subject to the following hardening and drying times prior to receiving dense floor coverings:

ARDEX A 35 MIX

walkable in

3 hours

ARDEX P 82 walkable in 1 hour

ARDEX K 55 walkable/ready

to receive floor covering after max.

2 hours

**Total ARDEX Time:** 

6 hours

Tile Fixing in Wet Rooms ARDEX A 35 MIX

walkable in

3 hours

ARDEX 8+9, first coat.

Drying time

1 hour

ARDEX 8+9, second coat.

Drying time

2 hours

ARDEX X 77 S tile adhesive.

Hardening time:

11/2 hour

ARDEX G8S FLEX

or ARDEX GK tile grout,

Hardening time

1½ hour

Total ARDEX Time: 9 hours

### **Application**

- 1. The steel deck must be efficiently protected against corrosion by applying an anti-corrosive coating.
- 2. Install the Rockwool Marine slabs.
- 3. Create a sliding layer by covering the sub-base with two layers of PE-foil - which also provides protection against moisture in the insulation.
- 4. Carefully install a 5 mm sealant strip along all walls and pipe penetrations to prevent impact and airborne sound and to minimise sound transmissions
- 5. ARDEX A 35 MIX is applied onto the sliding layer at a thickness of 40 mm. ARDEX A 35 MIX is pre-blended, so just add water. Mix a bag of 25 kg ARDEX A 35 MIX with 1.8 litres of clean, cold water using a forced action mixer. To facilitate the installation, we recommend that the mixed mortar is applied onto screed battens. If the fresh mortar is carefully worked, it will most often not be necessary to level and smooth the screed surface subsequently.
- 6. After 3 hours prime with ARDEX P 51 diluted with water in the proportion 1 part by volume of ARDEX P 51 to 3 parts by volume of water.
- 7. When the primer is dry (3 6 hours), apply ARDEX K 15 at a thickness of 2 - 4 mm. Where ARDEX P 82 replaces ARDEX P 51, the screed surface can be smoothed in as little as 1 - 2 hours.

### **Relative Density**

For a standard construction as described above under "Application", the relative density per mm/m2 will typically

Rockwool Marine Slab 200 - 30 mm thick	6.0 kg/m <sup>2</sup>	
Two layers of 0.15 PE foil	0.4 kg/m <sup>2</sup>	
ARDEX A 35 MIX : Density approx. 2.0 kg per mm/m², applied at a layer thickness of 3 mm	80.0 kg/m²	
Priming ARDEX P 82	0.2 kg/m²	
ARDEX K 55: Density approx 1.7 kg/mm/m², applied at a layer thickness of 3 mm	5.1 kg/m²	
ARDEX PREMIUM AF 2100	0.3 kg/m <sup>2</sup>	
Total Relative Density of the Construction	93.0 kg/m²	

### **Alternatives**

ARDEX A 35 MIX can be smoothed with all certified ARDEX levelling compounds. The hardening and drying times of the applied levelling compound will always determine when floor coverings can be installed.

### Tile Fixing

Tiles can also be installed onto the ARDEX A 35 MIX screed by using ARDEX X 77 or ARDEX X 77 S. As a grouting compound we recommend ARDEX G8S FLEX, ARDEX G7N FLEX or ARDEX GK. In wet rooms, ARDEX 8+9 can be applied as a waterproof membrane prior to tiling.

### Additional information

The hardening and drying times showed are subject to normal temperatures (approx. 20 °C) and a relative humidity of approx. 50 % RH. Lower temperatures and a higher humidity will extend the drying time.

Levelling and tiling of steel deck surfaces will require that the steel sub-floor is sufficiently rigid to avoid cracks in the tiling, caused by movements and deflections in the steel deck.

Note: We point out that fire tests have not been conducted and that no certifications have been obtained for the tile adhesives and the tile grouts, as this is not usually required by the authorities.

## References

### ROYAL CARIBBEAN INTERNATIONAL M/S FREEDOM OF THE SEAS, Nb 1352, Cruise Liner (USPH)

Aker Finnyards, Turku, Finland, Delivery in 2006 Turnkey Delivery of Galleys and Provision Stores

Modular Pantries and Ice Stations

Primer: ARDEX P 82

Levelling compound: ARDEX K 15 + ARDEX E 25 (1.000 m²) Grouting compound: ARDEX WA gray. Tile: 150\*150\*11 / 6 mm

(1.600 m<sup>2</sup>)

### FREEDOM CLASS NB 1353, Cruise Liner (USPH)

Aker Finnyards, Turku, Finland, Delivery in 2007 Turnkey Delivery of Galleys and Provision Stores

Modular Pantries and Ice Stations

Primer: ARDEX P 82

Levelling compound: ARDEX K 15 + ARDEX E 25 (1.000 m<sup>2</sup>) Grouting compound: ARDEX WA gray. Tile: 150\*150\*11 / 6 mm

(1.600 m<sup>2</sup>)

### **CARNIVAL CRUISE LINE** CARNIVAL MIRACLE, Cruise Liner (USPH)

Kvaerner Masa-Yards, Helsinki, 2004 Turn-Key delivery of Main Galley Turn-Key delivery of Provision Stores Turn-Key delivery of Galley and Pantries in Lido

Primer: ARDEX P 82

Levelling compound: ARDEX K 15 + ARDEX E 25 (600 m<sup>2</sup>)

### **BIRKA LINE** M/S BIRKA PARADISE, Cruise Ferry

Aker Finnyards, Rauma, 2004 Turn-Key delivery of Galleys and Provision Stores Primer: ARDEX P 82

Levelling compound: ARDEX K 15 + ARDEX E 25 (300 m<sup>2</sup>)

### **TALLINK** M/S GALAXY, Cruise Ferry

Aker Finnyards, Rauma, 2006 Turn-key delivery of Galleys and Provision Stores Modular Pantries, Delivery of Galley Equipment s/s Modular Bar Counters

Primer: ARDEX P 82

Levelling compound: ARDEX K 15 + ARDEX E 25 (180 m²)

Sealing compound: ARDEX 8+9 Tile adhesive: ARDEX FB 9 L Grouting compound: ARDEX WA

### REDERIET WAXHOLMSBOLAGET SKÄRGÅRDSBÅTARNA NORRSKÄR, SÖDERARM OCH SAXAREN

Screed: ARDEX A 35 MIX

Levelling compound: ARDEX A 45 + ARDEX E 90, ARDEX K 70 +

ARDEX E 25

### SCANDLINES HELSINGØR-HELSINGBORG

Toilet

Levelling compound: ARDEX K 70

Primer: ARDEX P 82 Membrane: ARDEX 8+9

Tile adhesive and grout: ARDEX WA

### SCANDLINES RØDBY-PUTTGARDEN

Galleys, corridors, restaurant and cafeteria

Levelling compound: ARDEX K 15 + ARDEX E 25, ARDEX A 45, ARDEX

Primer: ARDEX P 82 Membrane: ARDEX 8+9 Tile adhesive: ARDEX X 77 Grout: ARDEX GK

### BORNHOLMSTRAFIKKEN, HURTIGFÆRGEN

Corridors.

Primer: ARDEX P 82

Levelling compound: ARDEX K 55

### SØVÆRNET, MILJØSKIBE

Personnel facillities, gym Screed: ARDEX A 35 MIX Primer: ARDEX P 82

Levelling compound ARDEX K 15

### MÆRSK OLIE OG GAS **HALFDAN**

New floor in galley and mess hall, approx. 200 m<sup>2</sup>

Screed: ARDEX A 35 MIX Grout: ARDEX WA

Levelling compound: ARDEX K 15

### **GORM**

Renovation of cabins, approx. 100 m<sup>2</sup> Screed: ARDEX A 35 MIX Class A 60 Levelling compound: ARDEX K 15

### TYRA ØST

Renovation of cabins, approx. 400 m<sup>2</sup> Levelling compound: ARDEX K 15

### **DONG HORNSREV**

Living quarters, galley, laundry room and bath room, approx. 150 m<sup>2</sup> Screed: ARDEX A 35 MIX

### MÆRSK DRILLING NORGE MÆRSK GIANT

Galley and drystore, approx. 110 m<sup>2</sup> Screed: ARDEX A 35 MIX Tile adhesive and grout: ARDEX WA

### MÆRSK INNOVATOR OG INSPIRER

Recreation room, approx. 350 m<sup>2</sup> Levelling compund.: ARDEX K 15

### MÆRSK OIL QATAR **BF LOCATION**

Galley, approx. 120 m<sup>2</sup> Screed: ARDEX A 35 MIX

Tile adhesive and grout: ARDEX WA

### **NORTHERN OFFSHORE ENERGY ENDEAVOUR**

Renovation of living quarters, approx. 200 m<sup>2</sup> Screed: ARDEX A 35 MIX Class A 60 Levelling compounds: ARDEX K 15



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