

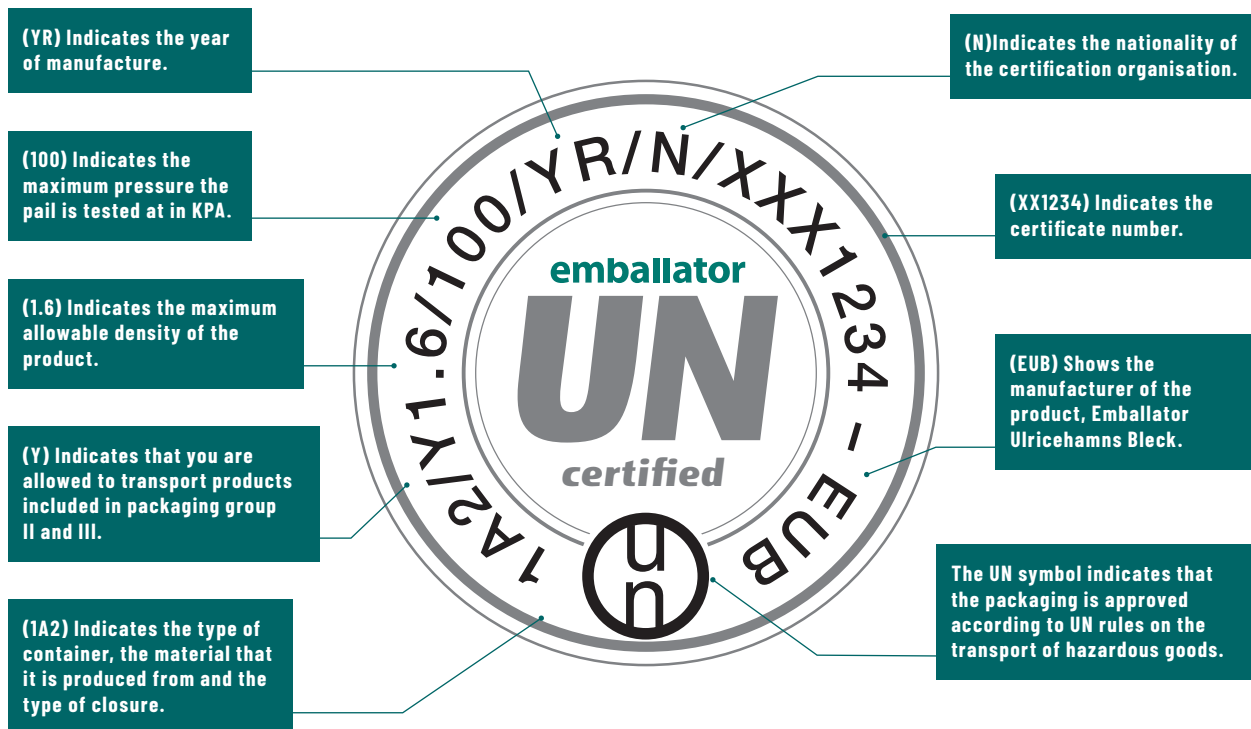
PACKAGING SOLUTIONS FOR FUTURE GENERATIONS

UN-certified metal packaging



UN PACKAGING FROM EMBALLATOR

When choosing UN certified packaging from us you get more than just physical products. You get safety, security and peace of mind from one of Europe's largest packaging groups. We constantly develop products, working alongside an established certification system with a history dating back to 1907.



An international standard for shipping hazardous goods

If you are going to transport hazardous goods that are covered by UN regulations then UN certified packaging is essential.

Hazardous goods are divided into nine different classes. Class 3 for example is flammable liquids which will in turn include sub-classes for different types of flammable liquid.

A hazardous goods class and sub-class will determine its level of danger or potential to cause harm and as such, different packaging groups exist to transport different product classes.

Packaging is split into groups I (X), II (Y) and III (Z) where group I is used for the most hazardous products.

What is UN?

UN is a global regulatory system established by the United Nations (UN) to ensure the safe transportation of hazardous goods by road, rail, sea and air. With UN approved packaging you can be confident that your packaging will withstand sample checks and, in the worst case scenario, accidents during shipping.



Testing and Awarding of UN Certificates

UN Certification for packaging is not awarded by the manufacturers of the packaging but by independent certification organisations.

Emballator holds a wide range of UN certificates to cover a wide range of packaging for different product classes. Each certificate ensures that the product has undergone and passed rigorous testing at an approved certification organisation. Products covered by UN certificates will be audited regularly by the independent organisation to ensure quality and consistency of packaging products.

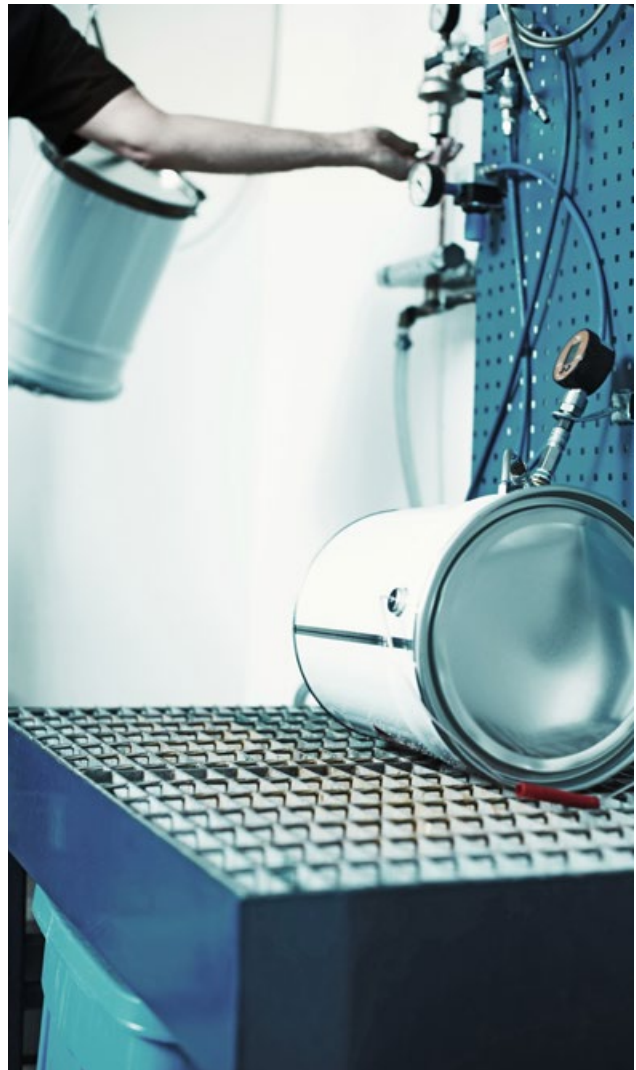
How Emballator products are tested for UN approval

DROPTEST. The pail is filled with water and dropped from a height of at least 0,8 metre (packaging group III, Z), 1,2 metre (group II, Y) and 1,8 metre (group I, X). Pails are dropped from different angles and in all three groups no leakage is allowed. When testing for group II the drop is equal to the maximum density of the product to be filled in the pail.

PRESSURE TEST. The pail is filled with water and pressurised to a level equal to the product vapour pressure at a given temperature. For air transportation a kPa of at least 95 is required in group III and 100 in group II. No leakage is allowed.

TIGHTNESS TEST. The pail is pressurised with air to 20 kPa in packaging group II and III and 30 kPa in packaging group I. No leakage is allowed.

STACKING TEST. Carried out at a load equivalent to the filled packaging (maximum permitted density). Packaging is stacked to a minimum height of 3 metres and no damage is permitted.



Why UN packaging from Emballator?

We are not content to rest on our current range of UN approvals. By working closely with leading test and certification organisations on programmes of continuous product development and user testing we strive to not only meet today's UN demands but also those of the future.

By systematically testing and evaluating our products, both ourselves and in cooperation with leading independent organisations, we ensure high quality in everything we do.



Continuous Testing



Internationally approved for air freight



ISO-certified for double reasons

We test our products on a continuous basis to ensure that they meet the high standards required.

For UN approved packaging, we perform regular drop tests, pressure tests and leak tests. Procedures are checked and verified annually by the independent certification organisation.

International Air Transport Association (IATA) is the organisation that represents the global air cargo industry.

IATA develops and sets the guidelines to increase security and service, particularly the demands on the containers that are loaded onto aircraft. Emballator Metal Group works with and meets IATA's recommendations on current products.

We are certified for ISO 9001 and 14001 and work continuously and actively to improve the quality of our products and services as well as reducing our environmental impact.

We constantly monitor all aspects of our business and work with the ISO framework in order to set goals and monitor outcomes.

HOW TO SEAL UN-PACKAGING

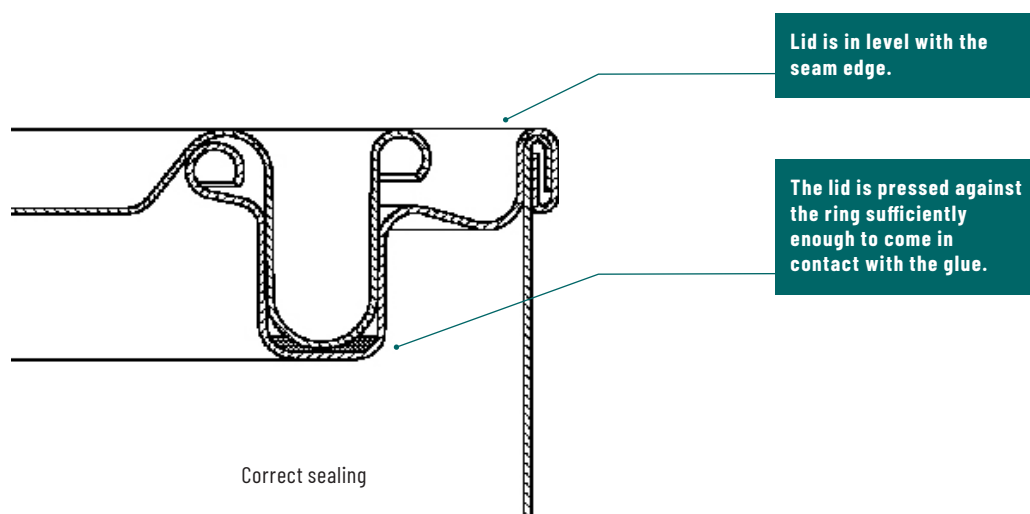
In general

The UN-certificate is a proof document stating that the total package, lid and can together, meet the requirements for dangerous goods according to UN recommendations. It is not sufficient that can, lid and other components separately are manufactured according to specified demands. The mentioned items need to be used together to achieve the intended function for the package and for the proof document to be valid. Furthermore, it is crucial that the sealing after filling is executed correctly. On the following pages you will be given the information required to be able to seal your UN-packaging correctly, and that it will be according to present UN certificate. The information fulfils the requirements in part 6.1.1.5 in ADR-S.

Cans with press down lids

UN-cans with press down lids are available in $\varnothing$ 99, 105 and 153 mm.

These cans have TT-type (Triple Tight) lids and rings. Glue is applied in the bottom of the ring, which will come in contact with the lid when sealing. The glue in combination with friction makes sure that the lid will not come off when the packaging is exposed to force of any kind, as in a fall for example. It is therefore crucial that the lid when sealing is pressed against the can with such force that it will come in contact with the glue inside the ring. To secure this, the amount of force from the pressure plate when sealing the lid should be minimum 2200N for $\varnothing$ 99 and 105, and 3000N for $\varnothing$ 153. After sealing, the lid should be in level with the seam edge of the can. If needed, a special pressure plate could be used when assemble the lid. This tool is designed to press the lid below the edge's level. See picture.

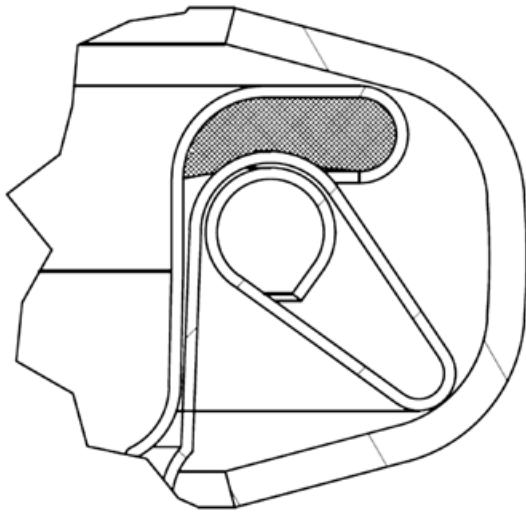


The UN packaging consists of a pail, UN +press lid and a UN ring latch with lock pin. The combination guaranties that the lid does not come off if the packaging is exposed to an increased internal overpressure or external damages, as for example a fall.

The design is first assembled with the UN press lid and the pail. A conventional lid-press with a plate and an air-cylinder is used to assemble the lid. The recommended force for pressing down is ca 2000 N.

After the UN press lid and the pail is assembled the UN ring latch is closed around the lid and the pails profile.

When closing an UN ring latch, ensure that the ring latch enclosures the ring latch lid and the lower edge of the pails profile. When the ring latch is closed, a correct locking pin must be mounted in the handle of the ring latch so that the ring latch cannot be opened.



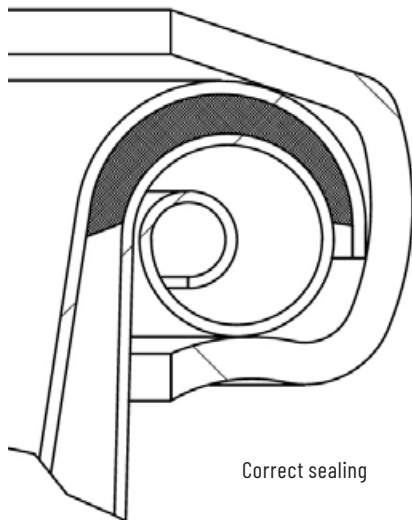
Press lid for ring latch UN

The UN packaging consists of a pail, UN +press lid and a UN ring latch with lock pin. The combination guaranties that the lid does not come of if the packaging is exposed to an increased internal overpressure or external damages, as for example a fall.

The design is first assembled with the UN press lid and the pail. A conventional lid-press with a plate and an air-cylinder is used to assemble the lid. The recommended force for pressing down is ca 2000 N.

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When closing an UN ring latch, ensure that the ring latch enclosures the ring latch lid and the lower edge of the pails profile. When the ring latch is closed, a correct locking pin must be mounted in the handle of the ring latch so that the ring latch cannot be opened.



Ring latch lid UN

When closing an UN ring latch and an UN ring latch lid, ensure that the ring latch enclosures the ring latch lid and the lower edge of the pails profile. When the ring latch is closed, a correct locking pin must be mounted in the handle of the ring latch so that the ring latch cannot be opened.

HOW TO SEAL UN-PACKAGING

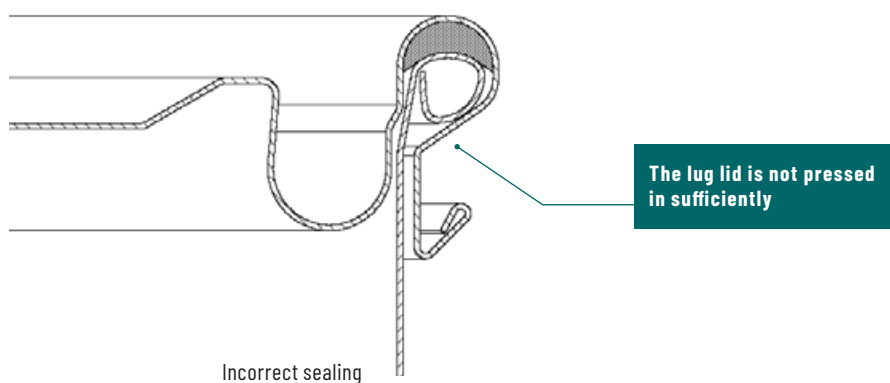
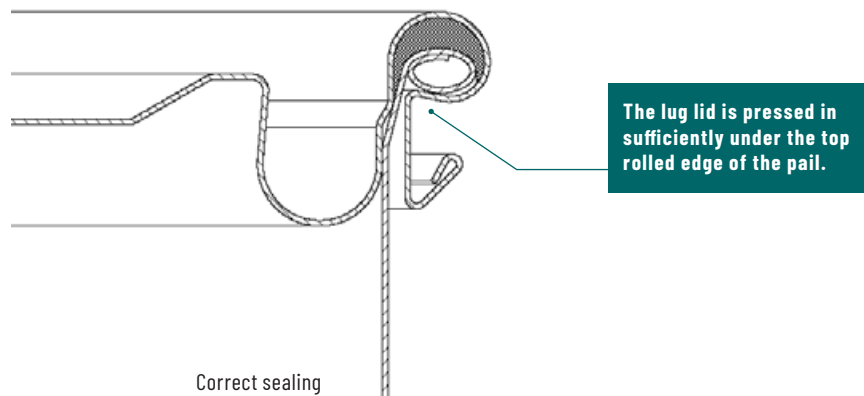
Pails with lug lid

UN-pails with lug lids are available in ø 180 and 285 mm.

The lid has so called lugs, which when sealed are pressed in under the top of the can, holding the lid attached to the pail. A special tool is necessary to seal a pail with a lug lid.

It is crucial that the lugs are pressed correctly in under the top rolled edge of the can. Furthermore, it is necessary to ensure that by a visual control, or through measuring the height of the roll after the lid is mounted. See picture.

If you notice deterioration in the sealing, it could be a sign of the sealing tool is damaged or worn. It could also depend on the power from the axle being too small, because the air pressure is insufficient. This causes the tool not reaching required bottom level.

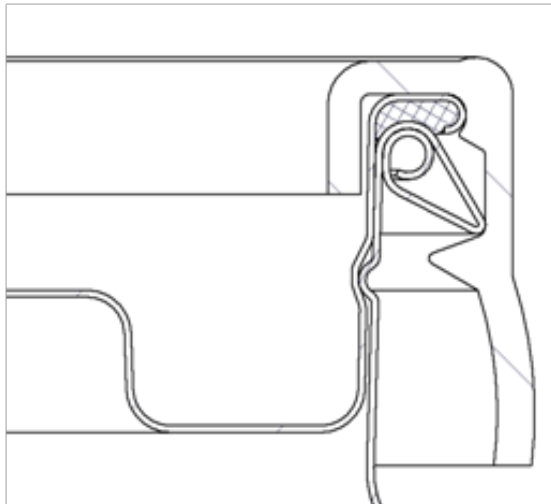


EasyOpen UN

The UN-Package consists of a pail and a lid. The lid is provided with a safety-ring of plastic that guarantees that the lid stays in place when exposed to inner overpressure or external violence, as for example a fall. The design allows for the lid to be assembled in a conventional lid-press with a plate and an air-cylinder.

To keep in mind when sealing the pail:

- Place the lid centered on top of the pail.
- The required force for pressing down the EasyOpen 180 UN lid is ca 4000 N.
- For EasyOpen 285 UN the required force is ca 6000 N.
- For an easy assembly the lid must have a temperature of at least 20° C. If the lids are stored in a cold room, they shall be moved into room temperature at least 24 hours before use on the pail.



Correct sealing