

Delivery conditions for aluminium and stainless steel silos and vessels

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1. Silo capacities

The specified silo capacities are calculated from the combined volume of the cylinder and with the drawings in the catalogue, rounded up or down. Claims will not be accepted in respect of divergent volumes. If required, the discharge hopper attachment in the silo shell can be raised or lowered.

2. Static configuration

Standard Zeppelin silos are configured in accordance with the load and bulk solids data given on page 2 of this catalogue. To prevent the base carcass or silo shell from becoming distorted, at least 80 % of the surface of the supporting rings must rest on the substructure (foundation, steel frame, roof of building, etc). Guidelines on the design, calculation and construction of steel frames should be obtained from Zeppelin (Notice G). You have to inform us before placing the order about deviating earthquake-, wind- or snow loads or other additional loads. Eventual additional costs which result from changes in load will be charged to you.

3. Static stress analyses

If a static stress analysis is required, this will be supplied upon receipt of the purchase order for the silo/s. Verification by an expert, if required, should be commissioned by the construction contractor at his expense. If, as an exception, a static stress analysis is required before the order is placed, we charge a nominal fee which is credited when the order is received (Price code ST01).

4. Materials

The conical roof, silo shell, cone and skirt are made of 5454/5457/5083 (AlMg3Mn/AlMg3/AlMg4.5Mn), accessories of 5457/6060 or 6082 (AlMg3/AlMgSi1 or AlMgSi0.5). Bolts and other fastening components are made from stainless steel. Foundation rings and anchor bolts in most simple design are made from galvanized steel. Zeppelin does not take responsibility for any corrosion damages on non-galvanized foundation rings. Possible discolouration of single shells of Aluminium silos are due to production on the part of the Aluminium producer. It does not impair the function and is no defect.

5. Surfaces

The surfaces stay untreated. We will not accept any liability for damage to surfaces in transit or during assembly. Silos are washed internally after completion. Depending on requirements, we recommend to clean silos and pipelines before use.

6. Weld seams

Aluminium silos' seams are welded airtight by the MIG and TIG processes. For reasons of process technology and strength, weld seams remain untreated. Possible weld spatter or other irregularities are removed. The treatment of the weld seams with stainless steel silos is made as per specifications.

7. Manufacturing tolerances

Manufacturing tolerances are assessed in accordance with Procedure Instruction 20 VA 04 007.

8. Packaging

Packaging for transport on land will be invoiced according to expenses.

9. Storage

The possibility of temporary, at any time revocable storage of the silos at our location takes place subject to free capacities. However, there is no claim to this. The costs for storage amount to € 3.50/m² per each week started, taking into account the necessary traffic areas. The storage of the silos is outdoors on unroofed surfaces. The risk of any weather-related damages and/or soiling has to be borne by the customer. Storage has no influence on due payments.

10. Transport

In case that the maximum admissible dimensions for transportation of silos by road or truck are exceeded, we will prepare sketches for loading of the material. Furthermore, we will apply for the required special transport permissions. We cannot accept any liability for unpunctual availability of the rail wagons, for an extended duration of the transport, rest times of the cranes on site and similar consequences resulting from delayed transportation.

In case that you fail to take delivery of the goods directly after declaration of readiness for shipment, the goods shall automatically become your property - subject to receipt of payment - and a contract for keeping the goods will be automatically concluded so that the goods are kept on our premises at your risk. Following readiness for shipment Zeppelin will only be liable for damages caused intentionally or by an act of culpable negligence.

11. Dates of delivery

Delivery dates will have to be agreed upon. We keep an ample material storage contingency thus being in a position to take on

short-term dates in individual cases - subject to free shop capacities.

The agreed delivery date will be guaranteed under the condition that the customer supplies technical clarification and drawings approval as scheduled. If we receive technical clarification after permission was supplied this may result in changes of delivery date and price terms.

12. Delivery

For delivery of the silos free access to site shall be guaranteed for the transport means if the assembly will be carried out by Zeppelin, the following pre-conditions shall be fulfilled:

- Availability of sufficient space to position large crane vehicles
- One small and one large crane vehicle shall be supplied by the customer, depending on the size of the silo
- One traverse shall be supplied by customer
- At least two helpers and the tools required shall be supplied free of charge for Zeppelin

In winter the silos might get dirty during transportation due to weather conditions. In order to avoid any possible visual effects caused by salt of grits, we recommend to clean the silos and accessories immediately upon their arrival with a steam cleaner. We cannot accept any liability for visual disturbances which are due to weather conditions.

13. Cleaning

The silos will be swept before delivery unless special cleaning has explicitly been ordered.

Chips or other impurities caused by the manufacturing process may be found in the silos. These can only be removed completely after erection, during a final cleaning process to be carried out by the client. Even if „washing and degreasing in the manufacturer's works“ have optionally been ordered, minimum remainders of impurities e. g. residual chips, may remain in the silos, loosened by transport. Therefore, we recommend cleansing of the silos as well as the connected pipelines according to your requirements before commissioning.

Zeppelin shall not be liable for damages or loss of product which is due to failure of carrying out final cleaning. This will also be valid if Zeppelin carry out final cleaning of the silos at the place of installation.

14. Readjust in price/supplements

The prices are calculated on the basis of the material prices and wages which are applicable on the day of conclusion of contract. For the case that the material prices and wages will change or the design will be modified, we reserve the right to change our prices. If the manufacturing drawings for the silo will be subject to modification while the order is carried out, we reserve the right, to adapt the prices accordingly.

15. Guarantee

We guarantee the use of fault-free materials, efficient manufacturing processes and the dimensional conformity and durability of our silos and accessories for a period of 12 months after entry into service or a maximum of 18 months after delivery or notification of readiness for shipment.

16. Silos operation

Central discharge during silo operation without formation of asymmetric flow channels and arching is assumed. We cannot accept any liability for any damages on the silo which could result from the asymmetric flow of bulk solids or arching. Please note the bulk solids' characteristics indicated in our order confirmation. The plant operator is responsible for the compliance with the design data.

17. Silo honking

Please note that discharge of certain bulk solids (e. g. PET, SAP, PBT, PA, PVC or starch) may cause noise and/or vibrations of the silo shell and the supporting structure. This cannot be considered as a fault and we, therefore, cannot accept any liability for subsequent costs.

Upon request Zeppelin offers various silencing devices, a patented solution among other things – adequate for your individual application.

18. Testing

The silos are tested according to Zeppelin standard with regard to dimensional and geometrical accuracy.

19. Documentation

We will provide you with the following documents:

- Silo drawings
- Static calculation ready for approval
- Foundation load data
- Documentation for accessories if applicable

20. Alterations

We reserve the right to introduce technical changes in the interest of product improvement.

Furthermore, please refer to the latest **VDMA Business Conditions for national business as well as the latest ORGALIME Business Conditions for international business**