Self Bunded Chemical Tanks

Installation, Operation & Maintenance Manual

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Polymaster

Contents

ABOUT THIS PRODUCT

Polymaster Self Bunded Chemical Tanks are purpose-built above-ground storage and dispensing systems for industrial chemicals. Using a tank-in-tank (bund-in-bund) construction, the inner tank holds the chemical while the outer bund provides secondary containment, protecting against leaks and spills at source. These systems are designed for safe chemical storage outdoors, at a safe distance from buildings and hazard-zoned areas.

The self-bunded design offers high resistance against mechanical impact and protection against weather. Available with optional dosing cabinet systems for controlled chemical dispensing. Australian made and independently certified to AS/NZS 4766.

By following the installation requirements in this manual, this product will give you many years of trouble-free service. This manual should be read in conjunction with any product-specific documentation supplied with the tank.

CORRECT TANK INSTALLATION IS THE SOLE RESPONSIBILITY OF THE PURCHASER.

KEY FEATURES:

- Self-bunded (tank-in-tank) construction — inner chemical tank within an outer bund for secondary containment
- High resistance against mechanical impact due to bunding system
- Weather-resistant design for outdoor installation
- Suitable for static storage and dispensing of Polymaster approved chemicals
- Compatible with optional dosing cabinet systems
- Control board (if present) — not suited for use in areas with risk of explosion
- Above-ground installation only — cannot be buried
- Australian made and independently certified to AS/NZS 4766

MATERIALS USED IN CONSTRUCTION:

- PE – Polyethylene (inner tank and outer bund body) — UV-stabilised, specially designed for rotational moulding of chemical and process tanks
- These advanced materials exceed all requirements of AS/NZS 4766 Polyethylene Storage Tanks for Water and Chemicals: excellent impact resistance, strength, environmental crack resistance, and a high level of UV and antioxidant stabiliser designed for the harsh outdoor Australian environment, minimum UV 12 rating

AUSTRALIAN STANDARDS

- Polymaster is certified to ISO9001 International Standards and undertakes regular audits from third-party auditors.
- Polymaster tanks are independently certified by BSI Benchmark. Every tank is labelled with full manufacturing details including a serial number for complete traceability.
- Products in this Installation Guide have been manufactured to comply with the above standards.

Quality Certified Company ISO 9001

GENERAL HEALTH & SAFETY

Read this manual carefully before installation and use. Pay attention to all safety warnings. This manual should be kept with the equipment at all times.

- This manual contains important information concerning the safe installation and use of this product. Read the manual carefully before installation and use, paying attention to all safety warnings.
- Installation and use of this product should only be carried out by properly trained and approved personnel.
- Users of this product are responsible for the safe and correct use of this product.
- Any changes to this product made without consulting the manufacturer will invalidate all warranties and guarantees.
- The components must not be altered or tampered with, due to potential risks to personnel.
- The manufacturer will not be responsible for any accidents or damages caused by incorrect installation or use of this product.
- This product is only suitable for storage and dispensing of Polymaster approved chemicals.
- If present, the control board contains electrical devices which are not suited for use in areas where there may be risks of explosion.
- Polymaster polyethylene tanks are heavy and require adequate equipment and properly trained personnel to unload and position them. Do not stand or work on top of the tank — surfaces are slippery and flexible which could result in serious injury or death.
- If the tank needs to be entered, ensure proper confined space procedures are adhered to and adequate ventilation equipment is provided.
- Any vehicle/machinery affected negatively or positively is not covered by the Self Bunded Tank warranty.

CHEMICAL RESISTANCE

A chemical resistance chart may be found on our website www.polymaster.com.au. It is recommended that you discuss your specific chemical storage requirements with a Polymaster consultant or study the comprehensive chemical chart to ensure compatibility. A more comprehensive list is also available on request.

POLYETHYLENE MATERIALS

Polymaster uses a variety of Polyethylene resins that have been specially designed for the rotational moulding process in the manufacturing of chemical and process tanks. These advanced materials exceed all requirements of the Australian standard AS/NZS 4766 Polyethylene Storage Tanks for Water and Chemicals. Key features include: excellent impact resistance, strength, environmental crack resistance, and a high level of UV and antioxidant stabiliser designed for the harsh outdoor Australian environment, minimum UV 12 rating.

TEMPERATURE & SG RATINGS

The temperature of the chemical/liquid stored has different effects on the polyethylene and can produce different effects within the same chemical range. Contact a Polymaster consultant if you are unsure about your application. A continuous liquid temperature above 40 degrees Celsius is not recommended for these tanks. Tanks are designed to a maximum Specific Gravity (SG) rating to suit the application and must not be exceeded.

VENTING

These tanks cannot be pressurised and are designed to operate at atmospheric pressure. Proper venting stops pressure or vacuum developing as the tank is filled or emptied. The vent should always exceed the size of the largest fill or discharge. Check that the chemical you are using is able to be vented to atmosphere without prior treatment.

SELECTING A SAFE LOCATION

GENERAL LOCATION

There are many aspects to consider when selecting the best location for your tank. Some points to consider:

- Excessive wind or seismic forces
- Area subject to flooding
- Safe distance from any source / equipment generating heat or flames
- Generally accessible location to ensure safe operation, maintenance and distance from other chemical in line with authority storage requirements

REGULATIONS

There may be local, state or national regulations that apply to your proposed tank installation. Check with the relevant authorities concerned to ensure all requirements are complied with. A thorough evaluation of the proposed site is recommended prior to any placement or installation works being carried out.

ACCESS

Service access and safe egress paths around the tank in line with Australian and local authority requirements to suit the specific chemical being stored is the responsibility of the installer and user of the tank. Do not block any service access or egress paths. Position the tank to allow for ease of regular inspection and maintenance. It is recommended that tanks are not installed adjacent to equipment or buildings that will impact cost-effective removal and/or replacement of the tank in the future. Use guards and physical restraints to prevent tank fittings and piping from impact damage and protect personnel from potential chemical leakage.

ABOVE GROUND

These tanks are specially designed for above-ground use and cannot be buried in any circumstances, due to excessive pressure causing the side wall to collapse. Below-ground tanks are available — please contact your Polymaster consultant if you have this requirement.

WARNING: Failure to comply with these precautions and instructions can result in serious property damage, injury or death and reduce the tank's performance and longevity.

TRANSPORT, HANDLING & STORAGE

DO NOT TRANSPORT WITH LIQUID INSIDE THE TANK.

The Self Bunded Chemical Tank must be protected against mechanical damage during transport and storage.

Loading and off-loading must be carried out using only professional equipment. For example, a crane or forklift with extended forks rated to the tank weight/load. Craneage at site is the responsibility of the customer/end user to suit the installation location. Fittings, covers, sockets or other protruding elements which are not designed for lifting or moving the tank must not be used to lift or move the tank.

The Self Bunded Chemical Tank must never be pushed, pulled, dragged or rolled.

During transport and storage, the cabinet door (if present) must be tightly closed and secured.

Loading and transport areas must be smooth and free of sharp edges. During transportation, the tank must be secured to prevent movement.

Storage time of the chemical being stored is to follow the handling requirements specific to that material, and is the responsibility of the customer/end user. Consult with the chemical supplier for information.

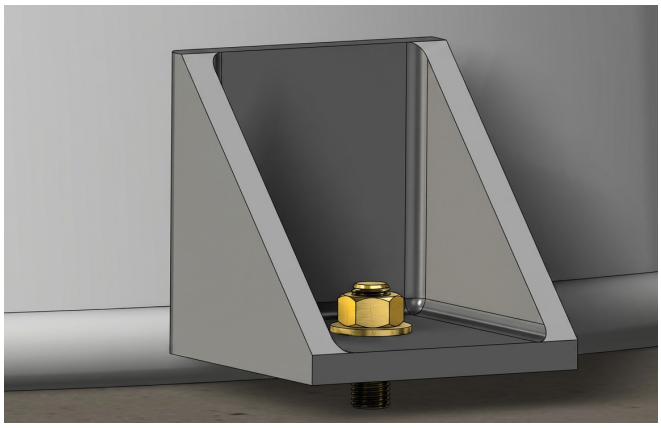
For all tank installation and maintenance, please take into consideration Health & Safety and Local Building Regulations.

For further advice, contact Polymaster on 1800 062 064.

TRANSPORT, HANDLING & STORAGE (cont.)

BASE AND RESTRAINT REQUIREMENTS

A solid flat and level plinth extending a minimum of 300 mm on all sides and made from concrete or bitumen is required under the tank. This plinth is to be engineered by the user. Engineering of any restraint or tethering system to suit local or chemical-specific storage requirements is the responsibility of the customer/end user.



The tanks must be adequately restrained to ensure stability whether full or empty. If hold-down lugs have been specified, these are only for tank positioning. These lugs are NOT designed to withstand forces or restrain the tank under external loads (e.g. wind load).

Use stainless steel M12 nuts, flat washers and chemical anchor studs (installer to provide) positioned in the centre of the 20 mm diameter hole in each lug. The nut is to be fastened to finger-tight against the lug so that it does not apply any load into the lug. Use a suitable Loctite (or equivalent) adhesive to ensure the nut remains in the installed position for the life of the tank.

INSTALLATION & USAGE

DO NOT PLACE PACKERS UNDER THE LUG.

When using, the outer wall will bulge slightly and the lug will rotate down and up in relation to the amount of fluid inside the tank due to tank wall expansion. This movement/rotation must NOT be prevented to avoid generating significant reaction loads in the tank wall.

- Prior to installing, inspect for damage. If damaged, do not install.
- In no cases should any holes be drilled or additional fittings be installed into the tank wall in addition to any provided on the tank as supplied by Polymaster.
- After installation, ensure this manual is left with the end user for future reference.

TANK TESTING AND CHEMICAL COMPATIBILITY

When installed, it is strongly recommended that tanks are hydrostatically tested for 24–48 hours before introduction of chemical. Remove all water used for testing in case of possible reaction with chemicals stored.

DO NOT FILL OUTER/BUND TANK WITH WATER FOR LEAK TESTING IF THE INNER TANK IS NOT COMPLETELY FULL WITH WATER. THIS CAN CAUSE THE INTERNAL TANK TO FLOAT AND CAUSE DAMAGE. NEVER FILL THE BUND MORE THAN 1/3 FULL FOR LEAK TESTING, AND MAKE SURE THE INNER TANK IS FULL WITH WATER ANYTIME THERE IS WATER IN THE OUTER/ BUND TANK.

Confirm compatibility of the tank and all associated fittings and gaskets with the chemical being stored. Label tank with appropriate chemical warning label and do not remove any Polymaster Warning Labels. Ensure tanks are adequately vented to prevent pressure or vacuum.

TANK LIFTING POINTS

In the event of tank relocation, the tank lifting should be performed using the labelled lifting lugs as shown in the lifting point diagram on the tank label. Do not lift the tank by using any of the installed fittings. The tank must be empty when lifted, taking care not to damage the tank walls, base, roof, pipework and fittings. Please contact Polymaster for appropriate lifting plans for your tank type.

FILLING & DISPENSING

NOTE: The tank must not be filled at a rate greater than 250 Litres Per Minute (LPM) when using the top fill assembly option.

The maximum fill level must NOT be exceeded.

- Filling should be performed only under constant supervision of an authorised person.
- Tank filling is to occur only via the provided Camlock or tank-specific fill point connection.
- Do not overfill. Check level gauge during filling.
- Disconnect delivery hose from coupling.
- Promptly clean up any drips or spills.
- The maximum tank fill/discharge rate is specific to each application's design and is based on fitting type and relief installed. Review your application to ensure the fill/discharge rate does not exceed the installed venting devices.

PIPING AND VALVES

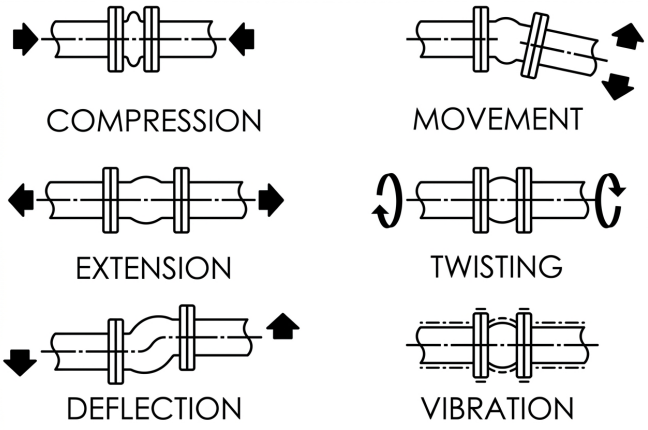
All hoses, piping and valves must be adequately supported independently of the tank. Flexible connections must be used when connecting to fittings installed on the tank, to ensure successful installation and tank warranty. All fittings, valves, and piping should be shielded to prevent possible physical impact and protect personnel from chemical spray or leakage.

WARNING: Failure to support and protect valves and piping and to provide engineered foundations for tank will void your warranty and could cause chemical release resulting in serious injury and/or property damage.

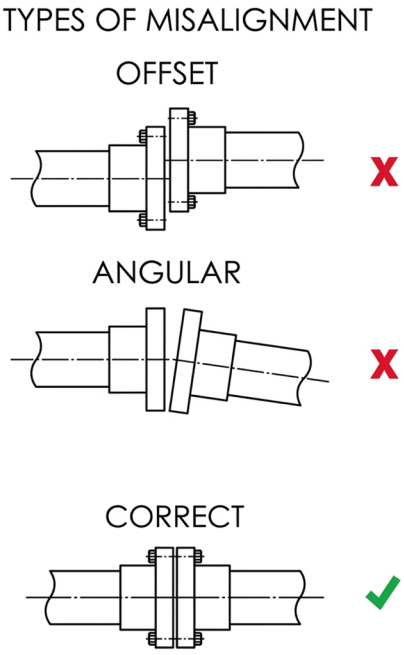
FLEXIBLE CONNECTIONS

Flexible connections are required on fittings installed on the tank to allow the tank to expand and contract and to protect the tank from pump vibrations.

INSTALL FLEXIBLE CONNECTION IN ACCORDANCE WITH THE SPECIFIC MANUFACTURER'S INSTALLATION GUIDELINES.



- Flexible connections are not to be used for correcting piping misalignment. The flexible connection and mating flanges must be installed in a centred, aligned and mated position.



- Attach only FULL-FACE flanges to the flexible connection. They are not designed to attach directly to the tank wall.

FLEXIBLE CONNECTIONS (cont.)

- Ensure adequate clearance between bolt ends for full use of flexible connections.
- Provide pipe support adjacent to the flexible connection.

FLEXIBLE CONNECTION MINIMUM SPECIFICATIONS

- Axial Compression ≥ 38mm
- Axial Extension ≥ 15mm
- Lateral Deflection ≥ 19mm
- Angular Deflection ≥ 14°

INSTALLATION OF FLEXIBLE HOSE CONNECTIONS

- Check flexible hose is compatible with the chemical being stored and is of sufficient size.
- Support the flexible hose in such a manner that horizontal and vertical movement is not impeded. It is the responsibility of the tank installer/purchaser to install the appropriate flexible connections between the tank and pipework. Failure to comply with this will void Polymaster's warranty.
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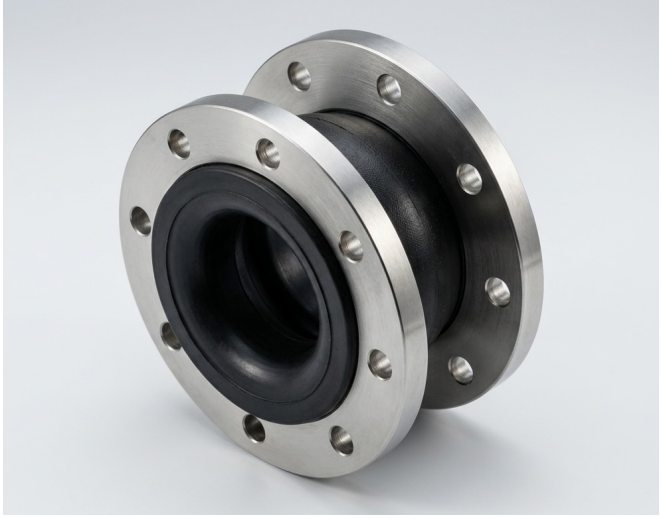
TANK WARRANTY – FLEXIBLE CONNECTIONS



All fittings, including outlets and inlets on the tank, must have a flexible joint connection between the tank and the plumbing or rigid pipework. This is vital to absorb movement and stress, isolate pump vibration, accommodate pipe misalignment, and minimise surge pressures. It is the responsibility of the tank purchaser to install the appropriate flexible connections. The Polymaster warranty is only valid if the installation has appropriate flexible connections.

For industrial applications with mild chemicals, rubber flexible joints are available from Polymaster Industrial.

SERVICE & MAINTENANCE

Regular routine visual inspections of your polyethylene tanks are important to ensure safety of personnel and preservation of stored chemical. Any sign of stress cracking, UV degradation and/or other signs of tank failure should be immediately reported and a full inspection carried out by an authorised Polymaster personnel. Internal checks are also recommended at least annually or as often as is practical — cracks will often show up on the inside surface before becoming obvious on the exterior.

- Plan and initiate a maintenance regime for the tank system. Aim to keep all system equipment in good working condition.
- Spare parts must comply with the requirements of the manufacturer and be of like for like type.
- Any faults or alarms should be reported to the station manager immediately.
- Protect against unauthorised access.
- Carry out a daily visual check of the tank station and ancillary equipment. Any leaks are to be promptly recorded, reported and repaired by a qualified service engineer or technician.
- If liquid is detected by alarm or observed around the outer tank or in the interstitial space (space between inner and outer tanks), promptly record, report and arrange for corrective action. Corrective action will include emptying the interstitial space (bund) first, followed by the inner tank, and isolating the tank from any processes. Determine the source of the liquid, possibly caused by an overfill event or leak. If necessary and accessible, polyethylene weld where the leak occurs. Test for leaks by filling the internal tank with potable water to the highest tank storage level and hold for 24 hours. Do not test the outer tank by filling with water as this can cause the internal tank to float and cause damage. Dispose of unwanted liquid according to local EPA guidelines.
- Ensure that contamination not intended to be in the tank is prevented from entering at any time either by design or a managed maintenance regime. If the stored liquid or fumes are allowed to escape outside the tank, ensure you check local EPA, Australian standard and local Authority guidelines and requirements for compliance. Metal items and control panels that could be affected by the fumes must be protected from corrosion by using good engineering practice. Additional corrosion protection to suit the chemical being stored is the responsibility of the customer/end user.

INTERNAL INSPECTION

It is recommended that an internal inspection is undertaken over regular intervals. Polymaster recommends this is done yearly. Empty the tank and neutralise any chemical remaining. All chemical handling must be safely performed in line with Australian Standard, EPA and local authority requirements for the specific chemical being stored. Where a confined space entry is possible, thoroughly clean the inside of the tank — a dirty tank will make inspection unsuccessful. Examine the tank surface for any cracking or surface degradation. Pay particular attention around fittings and the base in the radius where the floor meets the wall.

If a confined space entry is not possible, clean inside as well as possible from the inspection cover and use a light to inspect the internals.

WARNING: Do not enter a tank without confined space entry training and relevant personnel and permits. Use adequate approved ventilation equipment when inspecting the internals of a tank as fumes and vapours may be present. Use necessary fall protection equipment to prevent against accidental falls relating to entry method or slippery conditions. Failure to comply with these warnings could result in injury or death.

EXTERNAL INSPECTION

Thoroughly clean the outside of the tank and examine for any cracking or excessive surface degradation. Pay particular attention around all fittings, level indication tubing, flexible couplings, connection hoses and gaskets for any leakage or signs of corrosion. Inspect the vents for “free flow” to ensure adequate entry for pressure and vacuum. Check all pipe support brackets to make sure fittings, valves, piping etc. are adequately supported and protected.

RECOMMENDED CARE INSTRUCTIONS

ITEM/AREA OF INTEREST	ACTION RECOMMENDED	FREQUENCY
Chemical Tank	Refer to the Self-Bunded Chemical Tank Care Instructions and Troubleshooting Guide for details on care of the tank itself.	See Troubleshooting section
Visual Inspection	Visually inspect the entire unit for any changes in condition. Assess tank for any swelling, bulging or deformation of tank walls.	1 Month
Location	Confirm that the installation environment matches that of the original installation. Review changes for any influence to the safe use of the tank such as wind or distance to people and traffic.	As Used / 12 Months
Cleaning	Clean the unit regularly with soapy water and cloths to remove any buildup of dust/dirt/chemical spillage.	3 Months
Cabinet & Dosing System Condition	Temperature & SG Ratings of the fluids. Review the fluids being stored in the tank and confirm that they match those intended for original tank use. Inspect abrasions or cuts on the tank. Assess tank for excessive weathering. Assess tank for any swelling, bulging or deformation of tank walls.	As Used / 3 Months
Chemical Degradation and Compatibility	Confirm the chemicals currently used are compliant with the original installation. Review any change with Polymaster and the Polymaster Chemical Compatibility Chart.	As Used / 3 Months
Valves	During normal operation, check the action of installed ball valve handles.	As Used / 3 Months
Hose & Pipe	Check the condition of the hoses to ensure there are no kinks or deterioration of the material. Keep clean and free of dust/dirt.	As Used / 3 Months
Vent	Check and clean around the vent regularly to remove any buildup of dust/dirt. Check that there is nothing impeding the operation of the vent.	3 Months
Filter (Y-Strainer)	Inspect and clean the filter to the routine or where there is a change to fluid flow rate. Replace filter as necessary.	12 months
Seals	When the unit is completely empty, undo and remove the PVC-U ball valves. Check the condition of the seals within the ball valve. Replace if the seals have deteriorated.	12 months
Alarms	Check that the alarms activate when tested. Replace batteries in alarm boxes as necessary.	As Used / 3 Months
Gaskets	Visually inspect the condition of the flanges and connected fitting regularly for any changes or leaks. If any change is noted, completely drain the tank until empty then inspect and service the unit and replace gaskets as needed.	As Used / 3 Months
Electrical / Sensors	Visually inspect the condition of the power box and associated components. Clean the power box with a damp cloth to remove any buildup of dust/dirt/chemical.	3 Months

RECOMMENDED CARE INSTRUCTIONS

ITEM/AREA OF INTEREST	ACTION RECOMMENDED	FREQUENCY
Foundation/Base	Check the condition of the tank foundation for any erosion, cracking or subsidence. Repair as required. Ensure any repair materials meet the Installation Guide requirements.	3 Months
Moving	Refer to Installation Handling section for information on moving the tank.	
Cabinet Restraints	Review all restraints, tie down lugs and associated fasteners to ensure they are secure, meet "As Installed" condition and performance and are in good condition.	As Used / 3 Months
Sensors & Metering (if installed)	Monitor sensors and meters for large variations and unexpected alarms. Review meter for any discrepancies between known fluid usage rates and the measures.	As Used / 3 months
Cabinet Restraints	Review all restraints, tie down lugs and associated fasteners to ensure they are secure, meet "As- Installed" condition and performance and are in good condition.	As Used / 3 Months

TROUBLESHOOTING

TOPIC	POSSIBLE CAUSE	ACTION	CONTACT
Bund alarm activated	Over filling	Check high level alarm. Shut off filling pump before high level reached.	Contact Polymaster
Bund alarm activated	Leaking internal tank	Review tank location for any impact or damage. Review fittings.	Contact Polymaster
Bund alarm activated	Faulty bund alarm or alarm sensor	Check sensor/alarm operation. Check and replace batteries.	Not Required
Bund alarm activated	Water ingress	Check for damage to any vents or connected pipework.	Not Required
Dosing System — Leaks	Damage to system	Review for any damage to the system. Review service/maintenance history. Spare parts must comply with requirements of manufacturer and be of like for like type.	Contact Polymaster. Works on dosing system to be performed by an appropriately qualified technician.
Dosing System — Leaks	Degradation of fittings and pipework	Confirm the chemical being managed matches that noted in the original installation. Review the environment of the installation for any changes.	Contact Polymaster
Cabinet door not shutting	Tank not level on base	Re-level base so cabinet door will shut. Review for any damage and repair as required. Movement in transport can impact the doors; review and adjust as required.	Not required, or Polymaster for replacement parts.
Water present in product when dispensed	Water ingress to internal tank	Review the condition of the tank for infiltration. Review the condition of the dosing system for damage or infiltration. This includes checking the cabinet condition to ensure no water is entering the cabinet and subsequently the dosing system.	
Incorrect dispensing volume	Faulty valves or dosing system pumps	Check equipment operation in line with product-specific user manuals.	
Incorrect dispensing volume	Calibration of dosing system equipment	Review dosing system in line with the dosing system's product-specific user manuals.	

WARRANTY

Polymaster products are guaranteed against material or manufacturing defect. Warranty periods commence from the date of invoice:

Item	Warranty
Polyethylene tanks	5 years
Accessories / components	12 months
Hoses, nozzles, and sensors	3 months

WARRANTY CONDITIONS:

- Equipment is installed and commissioned in accordance with this manual.
- Equipment is installed and commissioned by a suitably qualified engineer.
- Equipment has not been subject to misuse, careless handling, faulty installation, or repairs by unauthorised personnel.
- Equipment has been purchased by the end user and is not for hire purposes.
- The tank is installed above ground.
- The tank is inspected every 3 months or to a total volume dispensed as required for that chemical or as specified by the dispensing/dosing system, whichever occurs first. This inspection is to be performed by a suitably qualified service engineer or technician.
- All fittings have appropriate flexible connections between the tank and plumbing or rigid pipework.
- The tank has not been filled at a rate exceeding 250 litres per minute (when using the top fill assembly option).
- The outer/bund tank has not been filled with water for leak testing unless the inner tank was completely full with water first.
- Immediately upon discovery of any defect, contact Polymaster and allow a representative to inspect the tank and its surroundings before any attempts are made to move the tank. Safe chemical handling takes precedence over a representative inspecting the tank.

WARRANTY EXCLUSIONS:

- Mechanical damage caused by the user, dealer, or improper maintenance.
- Faults, damage, or premature wear caused by improper use.
- Damage caused by third parties.
- Repairs carried out by unauthorised service personnel.
- Ancillary fittings such as contents measuring gauges or mechanical pumps (refer to respective manuals).

To make a warranty claim, you will need your serial number, proof of purchase, and a photo of the product clearly showing the issue.

Submit a claim at **polymaster.com.au/warranty.**

Questions? Contact Polymaster

1800 062 064
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sales@polymaster.com.au