

## **MULTISEAL TDS**

Multiseal TDS liquid sealing eliminates water loss in district and central heating, boilers, pipes, radiators and underfloor heating installations. Waterloss of more than 1000L per day may be repaired. The cured seal is resistant up to 1200 °C and 15 bars.

Using Multiseal TDS can cause blockages by constrictions (thermostatic valves, dirt-catchers). Multiseal must be removed from the system after sealing. Multiseal TDS seals all industry-known materials (plastic and metal). Multiseal TDS crystallizes at contact with the air. Hereby a solid mechanical seal is created at the leakage spot. A seal with Multiseal is permanent and durable. Multiseal TDS can also be used in open systems.

## **INSTRUCTIONS**

The heating system should be free of additives, such as frost protection, corrosion protection and sludge. If a gas boiler is connected to the plant Multiseal 30E may be used - depending on boiler type. With proper use Multiseal TDS creates no damage to the circulation pump and valves.

### Leaky boiler:

The heating system is disconnected from the boiler and the boiler is brought up to operating temperature. The maximum temperature is set with chimney sweep button. Shake the bottle with Multiseal TDS well. The required amount (see table) is pumped in through the boiler fill and drain valve. The boiler is filled until achieving a pressure of 1 bar. The circulation pump purged thoroughly through control bolt. The boiler will now stay in operation for 4 hours. After sealing the boiler has to be emptied of water and flushed several times. The boiler is filled again with clean water and the plant may be taken in operation again after the circulating pump is once again aired thoroughly.

### Leaky heatingssystem:

Strainers, dirt catchers, filters and heat meters has to be disconnected from the system. The boiler must be vented and filled with water before the sealing process begins.

The plant max. temperature is set with the chimney sweep button. All heater and mixing valve have to be opened completely. The circulation pump purged thoroughly and put into operation. Now take out water equivalent to the quantity Multiseal TDS which has to be added. (see table).

Shake the container with Multiseal TDS well. The necessary amount is now pumped in through the boiler fill and drain valve. The facility is filled to normal operating pressure. The circulation pump vented again thoroughly through control bolt. PH must now be 10.5 - 11.0 in the system water. The plant will now remain in service for 7 hours under the described conditions. The actual sealing takes place during 1 or more days, but we recommend that MULTISEAL TDS must remain at least three days in the facility. PH must then be kept between 10.5 to 11.0.

After the sealing empty the plant totally and rinse thoroughly with clean water and refilled to normal operating pressure and all the removed parts can be reassembled. The circulation pump has to be purged thoroughly again.

If there is a modern high-performance boiler at the plant, or a boiler that is newer than 5 years, we recommend that you by-pass the boiler using an external circulation pump with built-in heater. In this case, MULTISEAL Special always has to be flushed out of the system after sealing. If it is possible to isolate the leak at the plant to a single string or circuit, it is recommended to follow the description for sealing heating systems with district heating (below).

### For district heating systems:

If the heating system runs on district heating it is necessary to determine in which part of the in-house-system the leak is located. A closed circulation over the part (circuit) with the leak is established (preferably with heating - 50-60°C) and Multiseal TDS in the correct concentration (PH 10,5 – 11,0 see ratio below) is added. Shake the container with Multiseal well before the product is mixed into the system water. Heating should be added as it speeds up the sealing procedure. Circulation (with heating) over the circuit with leak should now be maintained under the described conditions until the leak is sealed - it typically takes 1 day, but it may take up to 6 days at some under floor heating installations. After sealing, rinse the heating circuit thoroughly with several changes of water; fill the circuit with water again and connected the circuit to district heating plant system again. The equipment used for the sealing procedure - and especially the external circulation pump - also has to be rinsed thoroughly with several changes of water.

**Safety data for Multiseal TDS:**

If Multiseal TDS comes into contact with eyes, rinse immediately with plenty of clean water and seek medical advice. Skin Contact: Wash skin immediately with plenty of water. When working with Multiseal TDS wear suitable protective gloves and goggles or face shield. Multiseal TDS is non-toxic (but should not be digested) in the specified mixing ratio. Multiseal TDS must be immediately washed off with water if it comes to objects outside of the pipe system (tiles, sinks, etc.) because otherwise crystallization will take place, and the crystallised product is very difficult to remove.

Moreover, observed the usual precautions when handling chemicals. Keep out of reach of children

**Disposal:**

This product can when diluted to the correct ration be discharged to sewer system.

**Composition:**

Alkali salts, fibers and other additives - See MSDS.

**Mixing ratio:**

1.5 liters to 100 liters of water plants.

Control Option: at the correct mixing ratio the pH value has to be between 10.5 and 11,0. No solubility with other chemicals. Temperature and pressure stable.

**Shelf Life:**

5 years from date of manufacture - Protect from frost!

**Dosing instructions for Multiseal**

The heating plants approximate water content may be derived from the following table. Newer heating system operates with a relatively small amount of water and may be measured accurately by draining the heating water and measured in liters.

**Control Option:**

By proper dosing of Multiseal the pH value is between 10.5 and 11.

Indicator strips (on the side of the can of Multiseal) is immersed in the test liquid, and is read while they are still wet with respect to the color scale, which also is located on the side of the can.

In solutions with low concentrations, the indicator strips must remain in the test liquid until a color change can no longer be observed (1-10 min)

<b>Conventional heating plant:</b> For each 1000 kcal/h (0 1,16 kW)	
a) Convectors = 6 liter water for about 38 kW = 2 liter MULTISEAL for about 77 kW = 4 liter MULTISEAL for about 116 kW = 6 liter MULTISEAL for about 155 kW = 8 liter MULTISEAL	c) Radiators (Cast Iron) = 14 liter vand for about 17 kW = 2 liter MULTISEAL for about 33 kW = 4 liter MULTISEAL for about 50 kW = 6 liter MULTISEAL for about 66 kW = 8 liter MULTISEAL
b) Plate Iron Radiators = 10 liter vand for about 23 kW = 2 liter MULTISEAL for about 46 kW = 4 liter MULTISEAL for about 70 kW = 6 liter MULTISEAL for about 93 kW = 8 liter MULTISEAL	d) District heating pipe for about. 12 kW = 2 liter MULTISEAL for about 23 kW = 4 liter MULTISEAL for about. 35 kW = 6 liter MULTISEAL for about 46 kW = 8 liter MULTISEAL

<b>Underfloor heating systems:</b>	
a) Only floor heating without radiators: per. 100 m2 habitation about 150 L plant water for about 130 m2 = 2 liter MULTISEAL for about 260 m2 = 4 liter MULTISEAL for about 390 m2 = 6 liter MULTISEAL for about 520 m2 = 8 liter MULTISEAL	b) floor heating with radiators: per. 100 m2 habitation about. 350 L plant water for about. 60 m2 = 2 liter MULTISEAL for about. 115 m2 = 4 liter MULTISEAL for about 170 m2 = 6 liter MULTISEAL for about 230 m2 = 8 liter MULTISEAL

<b>Volume calculation in general:</b>	
<b>Black and galvanized pipes</b>	
1m 1/4" pipe = 0,06 L/M	1 m 1 1/4 " pipe = 1,00 L/M
1m 3/8" pipe = 0,12 L/M	1 m 1 1/2" pipe = 1,30 L/M
1 m 1/2" pipe = 0,2 L/M	1 m 2 " pipe = 2,20 L/M
1 m 3/4" pipe = 0,35 L/M	1 m 2 1/2 " pipe = 3,20 L/M
1 m 1" pipe = 0,6 L/M	1 m 3 " pipe = 4,80 L/M
<b>20mm PEX</b>	
1m 20mm PEX = 0,2 L/M	We assume that 4M PEX tubing is used per M2 underfloor heating. This gives a volume of water of 0.8 L per M2 underfloor heating.

**Attention:**

The above information is given on basis of tests and experience. As we do not have the control over the usage of the product, it is the installer who has to make sure, that the product is suitable for the intended use or installation.