QAQC LAB
www.qclabequipment.com

Agglomeration Accessory Kit Instructions

For use with:- 50186002
50186003

Copyright 2021 Sherwood Scientific Limited
All rights reserved.

QAQC LAB 589 Rappahannock Drive White Stone Va 22578 TEL (804) 318-3686

Introduction

In the modern food, feed additive and chemical industries, there are increasing demands for modifying and controlling the performance of materials. Agglomeration is a viable approach to modifying solid material to yield a more useable form with desired properties. In other words, agglomeration processes transform small solids to materials of larger sizes, with either random or controlled shape.

For Fluidised-bed agglomeration, a powder is fed into a fluidised-bed dryer and the particles are bound together with a liquid binder, forming agglomerates.

The agglomeration accessory for the Sherwood M501 Fluid Bed Dryer is provided to allow small scale experimentation prior to lab scale agglomeration application development. It will, unfortunately, not be suitable for agglomeration experiments where the material to be sprayed is highly viscous or a slurry of soluble and insoluble ingredients.

Unpacking

Check for the presence of the following items. Anything missing or damaged must be reported to the supplier immediately.

Cat. No.	Item	Quantity
00172043	Tubing PVC Reinforced 6mmID	1 metre
00172106	Tubing Tygon 1.6mmID	1 metre
50108001	Air Regulator Assy for Agglomeration Accessory	1
50135000	Tub Assy 5L Sealed with GL32 Port	1
50135026	Top Cap with Terylene Bag (st.st.)	1
50186101	Agglomeration Accessory Assembly	1
50191004	Instructions for Agglomeration Accessory	1
85101000	M851 Air Compressor 115V	
or		1
85101001	M851 Air Compressor 230V	

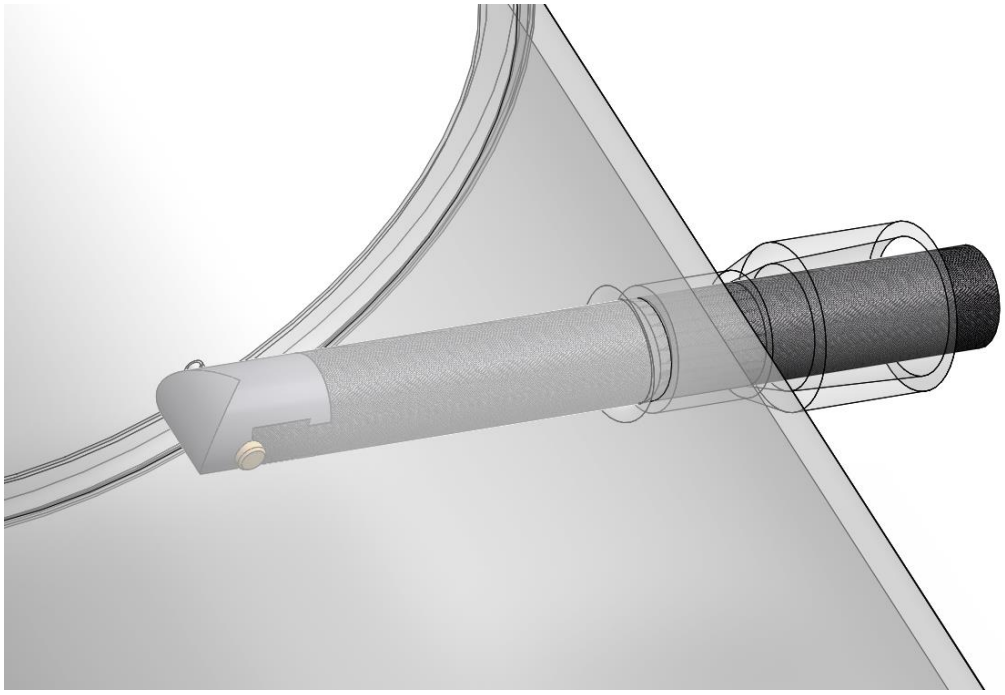
QAQC LAB 589 Rappahannock Drive White Stone Va 22578 TEL (804) 318-3686

Assembly

The agglomeration accessory kit is provided in 4 main parts, the agglomeration wand assembly, the stainless-steel top cap with bag, the compressed air regulator assembly, and the air compressor unit.

The agglomeration accessory kit is designed for use with a Sherwood Model 501 Fluid Bed Dryer; specifically one fitted with the large 5 litre glass tub with GL32 port.

NOTE: The agglomeration accessory cannot be used at the same time as the temperature/humidity probe (50186500) accessory.



The agglomeration accessory is fitted into the GL32 port on the glass tub. The top cap must be removed, and the agglomeration accessory inserted from the inside of the tub.

Remove the cap from the GL32 port, feed the air and liquid sample inlet tubes with the Luer fittings through the GL32 port from the inside. Push the agglomeration accessory into the port so it fits snuggly. Feed the tubes through the hole in the GL32 cap and then fit it over the end of the agglomeration accessory. Screw the cap to the port ensuring the agglomeration accessory is pushed securely into the port from the inside, maintaining a snug fit between the body of the agglomeration accessory and the inner rim of the GL32 port. The end of the wand, housing the atomiser, should be positioned so as to be as central to the tub as possible.

Connect the female Luer fitting of the air pressure regulator assembly (50108001) to the male Luer fitting on compressed air inlet tube of the agglomeration accessory assembly.

Fit the length of Tygon 1.6 mm ID tubing (00172106) to the barbed Luer fitting on the liquid sample inlet tube of the agglomeration accessory.

Connect the reinforced PVC compressed air tubing (00172043) to the outlet of the air compressor unit secure in place with the Unex hose clips supplied with the compressor unit.

Connect the other end of the PVC compressed air tubing to the 6 mm metal barbed fitting on the air regulator assembly, again using a Unex hose clip to secure it in place.

QAQC LAB 589 Rappahannock Drive White Stone Va 22578 TEL (804) 318-3686

Operation

Before beginning to aspirate the binding agent, solid sample should be added to the dryer tub, the bed fluidised and brought up to temperature. Refer to M501 operator manual for more information on operation of the main fluid bed dryer unit.

Switch on the air compressor and allow to warm up for approximately 5 minutes.

Set the air pressure using the air pressure regulator to achieve the desired uptake rate. Note the uptake rate will vary depending on the viscosity of your binding agent. Some amount of method development will be required prior to large batch tests to identify the correct uptake rate for your application and so the correct air pressure required to achieve that. For reference, the uptake rate is approximately 6.0 ml/minute at 15 psi when aspirating deionised water.

Once the sample tub and compressor have been allowed to warm up to temperature and the air pressure has been set, aspiration of the binding agent can begin.

Maintenance

Atomiser

The stainless-steel atomiser is a solid construction and suitable for most forms of chemical and mechanical cleaning.

WARNING: Do not submerge in strongly acidic or basic solutions.

Organic solvents, mild aqueous cleaners, sonication baths and compressed air can be used to clean the atomiser in case of blockage or for general day to day cleaning.

The atomiser can be removed by gently sliding the atomiser retaining clip off the end of the agglomeration accessory assembly and pulling the tubes off the barbed connectors of the atomiser.

Agglomeration Wand

Do not use organic solvents on the atomiser holder. Use water and soap to clean the body of the agglomeration wand, as necessary.

Top Cap with Filter Bag

The top cap is dishwasher safe, clean after each use and allow time to dry before reassembling the tub.

General Maintenance

For general maintenance of a FBD see operator manual

For compressor maintenance see compressor operator manual.

QAQC LAB 589 Rappahannock Drive White Stone Va 22578 TEL (804) 318-3686

Trouble Shooting

Blocked Atomiser

If the uptake rate drops significantly the nozzle may have become blocked by solid material or dust particles. Remove the atomiser from the atomiser holder, disconnect the compressor air and sample tubes. Switch on the compressor and attempt to unblock the atomiser by holding the compressed air tube against the atomiser outlet nozzle. Ensure there is no undissolved material in the solution being sprayed onto the bed.

Water observed in the compressed air lines

Water may condense in the compressed air hose connecting the compressor and the compressed air regulator, it is important that this is not allowed to reach the air regulator as this can cause damage and may contaminate your sample if it is allowed to reach the atomiser where it will be ejected onto the sample bed. If this becomes a persistent problem, it is recommended that a water trap be fitted between the compressor and the compressed air regulator. Sherwood can provide a water trap accessory for the compressor unit, please contact your local Sherwood supplier, and quote the part number 85586000.

QAQC LAB 589 Rappahannock Drive White Stone Va 22578 TEL (804) 318-3686