2017 Portable Containment Equipment
BUCK® & Hicoflex®
1 CONTENT

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2 INTRODUCTION

2.1 Containment

Containment issues are a vitally important aspect of solid dosage form production. Active Pharmaceutical ingredients (APIs) are becoming increasingly hazardous, with more than 50% of all new chemical entities (NCEs) being classified as potent (OEL <10 μg/m³). It is essential and often Law to protect operators from exposure to the product as well as prevent cross-contamination of other products manufactured in the same facility.

GEA has a long history of expertise and an unparalleled depth of experience in the field of containment and offer a wide range of technologies and equipment that improve and enhance the efficiency and performance of solid dosage form plants for the safe transfer of powders.

GEA does not only offer a comprehensive range of robust and compliant containment products, it also boasts unrivalled experience in identifying the most appropriate solution for your specific needs and a thorough understanding of containment risk analysis.

BUCK® is the market leading supplier of split butterfly valves and contained docking systems for the transfer of powders. The BUCK® range of containment products includes the Buck MC Valve utilising two identical passive halves and the unique Hicoflex® disposable containment system.

Attention:
The containment performance values (STTWA) of the valves are not directly comparable to the product OEL.
2.2 BUCK® MC valve

The BUCK® MC (modular containment) split butterfly valve builds on the proven design principles of the first generation of Buck split butterfly valves and offers a number of key additional features and benefits:

- Unique passive-to-passive valve design with a centralised actuation ring; the passive valves freely orientate, reducing operator docking error.
- Modular design to allow flexible and customized solutions for every requirement, built from standard components.
- Modular containment: with a 1–10 μg/m³ (STTWA) containment level offered as standard, the system is also available with an advanced air cleaning actuator to further improve containment levels down to <1 μg/m³ (STTWA).
- Simple maintenance: fewer component parts and more identical parts owing to the passive-to-passive design, reducing spare part inventory
- WIP, CIP and COP as standard
- Contained quick changeover of the contaminated valve core with working parts remaining on the station, allowing for extremely fast product changeover – fully complementing the Courtoy™ MODUL™ tablet press ECM containment concept.
- Robust docking: the new central actuation ring design and compensator device overcomes potential misalignment of the container and docking station.

Manual docking for discharging from a mill to an IBC with a BUCK® MC valve.

Automated docking for discharging into an IBC with a BUCK® UMC valve (with suction).
2.3 Hicoflex®

Hicoflex® (High Containment Flexible) was the first disposable high containment interface for dust free and safe transfer of solid dosage materials in the market. Since 2006 Hicoflex® has offered our worldwide client base the following advantages:

- Lightweight and easy for a single operator to handle
- Flexibility to allow poor-flowing materials to be manipulated out of the bag
- Disposable, so no cleaning or validation
- Low cost compared with solid transfer systems
- Full yield discharge
- No cross-contamination
- Instant high protection for operator and product
- Very fast installation
- Simple/fast materials handling
- Visual product transfer.

**Functionality**

The Hicoflex® disposable containment technology consists of two identical couplings that are joined together to seal the external faces, thus enabling closed transfer. The Hicoflex® disposable containment system is opened by applying a compression force to both ends to create an opening through which product transfers.

Each Hicoflex® coupling is either attached to both a disposable containment bag to transport material or to a disposable containment adapter that fits the inlet or outlet chute of the process to allow product transfer.
3 EQUIPMENT SPECIFICATION

3.1 BUCK® MC Valves

MC Lite Actuator Ring

The MC Lite Actuator Ring is a lightweight manually operated portable drive unit for the opening and closing of two Buck passive MC half valves together as one valve enabling contained material transfer. The actuator ring contains a manual locking mechanism to keep the two MC half valves locked together during operation. The opening and closing of the valve is done via the manual handle which is connected to the discs drive shaft. Alignment of the two passive valves during docking is achieved by the unique chamfer around the MC Lite Actuator Ring allowing self-centering of the two halves.

- Materials
  - non-product contact: Aluminium, Polyamide
- Release
  Two sided
MC Half Valve

The MC Half Valve forms the basis for the Buck® MC docking system. It is the only part of the docking system which is in contact with the product. It consists of a steel housing, main body seal, disc seal and a butterfly disc fixed by bearings.

The MC Half Valve can be integrated in the Actuator Ring or directly mounted to the process unit or a container, bin or drum.

- Materials:
  - product contact metal parts: SS 1.4404 / 316L
  - non product contact metal parts: SS 1.4301 / 304
  - seal material: White EPDM
- Disc: Polished
- Tightness: vacuum - 0.2 bar (g), in closed position

Tri-Clamp Flange

This adapter piece has a mating flange according Buck Valve foot-print on one side and a Tri-Clamp flange on the other side. Once bolted to the MC Half Valve, the Half Valve can be easily connected to a number of process units or IBCs via the Tri-Clamp connection.

- Materials:
  - product contact metal parts: SS 1.4404 / 316L
  - fastener: SS 1.4301 / 304
  - gasket: PTFE
- Type: O.D. (standard)

Note: The Tri-Clamp fastener and gasket are not included in the scope of supply, but can be quoted on request.
Manual Raise/Lower Assembly

The Manual Raise/Lower Assembly allows manual docking of two valve halves without the need for a mechanical lift. While one valve remains static, the second valve is manually raised or lowered to dock with the static valve. A good example is from an isolator outlet to a static IBC inlet valve. A flexible bellow allows for any required compensation for valve misalignment during the docking process.

The manual/raise lower assembly is to be fixed to the process equipment and consists of a stainless steel support with handles on both sides for a comfortable handling, a flexible bellow and a connection Tri-Clamp flange.

An MC Actuator Ring or MC Lite Actuator Ring will be required to open and close the two valve halves.

- **Materials:**
  - product contact metal parts: SS 1.4404 / 316L
  - non product contact metal parts: SS 1.4301 / 304
  - bellow: White EPDM
  - gasket: PTFE

- **Approx. Stroke:** 110mm
- **Working condition Bellow:** ±50 mbar (g)
- **Connection to the process unit:** Tri-Clamp Flange

*Note: The Tri-Clamp fastener and gasket are not included in the scope of supply, but can be quoted on request.*
Wash-Hood with CIP Spray Balls & Wash Valve

The Wash Hood is directly mounted onto the MC half valve, typically an inlet valve. It includes an integrated wash valve and two CIP spray balls, for wetting down and cleaning of the docked valve and also comes with a drain in case it is mounted upside down.

The non-rotating CIP spray balls with a spray angle of approximately 360° will distribute the wash detergent in the product contact area. The lance provides effective cleaning of the contaminated surfaces of MC half valve and additional extended product contact areas such as bellows.

The cleaning can be started after locking and opening of the valve.

- **Materials:**
  - product contact parts: SS 1.4404 / 316L

- **Connection:**
  - for Detergent Supply Fix: ½” Tri-Clamp
  - for Drainage: 1” Tri-Clamp (DN100/150)

- **Pressure:** optimal: 2.5 bar

- **Temperature Range:** 5°C - 95°C

Wash MC half valve

The Wash Valve is constructed in a steel housing, with a special main body seal with chamfer, disc seal and a special “wash” disc with further chamfer fixed by bearings. This chamfer allows cleaning of the opposed docked MC half valve. The housing has mounting holes to allow mounting on different attachments.

- **Materials:**
  - product contact metal parts: SS 1.4404 / 316L
  - non product contact metal parts: SS 1.4301 / 304
  - seal material: White EPDM

- **Disc:** polished, with chamfer

- **Body seal:** with chamfer

- **Tightness:** dust tight
Wash-Hood with adjustable Lance & Wash Valve

The Wash Hood is directly mounted onto the MC half valve, typically an inlet valve. It includes an integrated wash valve, CIP spray ball, extractable wash lance with rotary spray nozzle for wetting down and cleaning of the docked valve and process equipment internals and also comes with a drain in case it is mounted upside down.

The non-rotating CIP spray ball with a spray angle of approximately 360° will distribute the wash detergent in the product contact area. The lance provides effective cleaning of the contaminated surfaces of MC half valve and additional extended product contact areas such as bellows. The cleaning can be started after locking and opening of the valve.

- Materials:
  - product contact parts: SS 1.4404 / 316L
  - Connection:
    - for Detergent Supply Fix: ½" Tri-Clamp
    - for Detergent Supply Lance: ¾" Tri-Clamp
    - for Drainage: 1" Tri-Clamp (DN100/150)
  - Pressure: Optimal: 2.5 bar
  - Temperature Range: 5°C - 95°C

Wash MC half valve

The Wash Valve is constructed in a steel housing, with a special main body seal with chamfer, disc seal and a special "wash" disc with further chamfer fixed by bearings. This chamfer allows cleaning of the opposed docked MC half valve. The housing has mounting holes to allow mounting on different attachments

- Materials:
  - product contact metal parts: SS 1.4404 / 316L
  - non product contact metal parts: SS 1.4301 / 304
  - seal material: White EPDM
  - Disc: polished, with chamfer
  - Body seal: with chamfer
  - Tightness: dust tight
Drain Pot with Wash Valve

The Wash Pot with Drain only is typically connected to the outlet valve of a process unit during CIP/WIP procedure. It is integrated with a wash valve to ensure proper wetting down of all possible product contact parts of the MC half valve. The Wash Pot is supplied with handles for easy handling.

The cleaning can be started after locking and opening of the valve.

The Wash Pot will be supplied with a Tri-Clamp connection to use as a drainage for wash water.

- **Materials:**
  - product contact parts: SS 1.4404 / 316L
- **Connection:**
  - for Drainage: 1” Tri-Clamp (DN100/150)
- **Temperature Range:** 5°C - 95°C

Wash MC half valve

The Wash Valve is constructed in a steel housing, with a special main body seal with chamfer, disc seal and a special “wash” disc with further chamfer fixed by bearings. This chamfer allows cleaning of the opposed docked MC half valve. The housing has mounting holes to allow mounting on different attachments.

- **Materials:**
  - product contact metal parts: SS 1.4404 / 316L
  - non product contact metal parts: SS 1.4301 / 304
  - seal material: White EPDM
- **Disc:** polished, with chamfer
- **Body seal:** with chamfer
- **Tightness:** dust tight
3.2 Buck Valve Accessories

**Tri-Clamp Fastener & Gasket**
The Tri-Clamp fastener is to connect the MC half valves Tri-Clamp flange to the process interface.

- **Materials:**
  - non product contact metal parts: SS 1.4301 / 304
  - seal Material: PTFE
- **Seal type:** O.D. (standard)

**Opening Tool**
The opening tool is used to manually open the MC half valve without the use of the actuator ring. It is also used for mounting and removing of the disc during maintenance work.

- **Material:** SS 1.4301 / 304
- **Knob:** Duroplastic

**Removal Tool**
The Removal Tool affixes itself to the MC half valve and can easily lift the MC half valve from its location to be taken away for cleaning and servicing.

- **Material:** SS 1.4301 / 304

**Vacuum Removal Tool**
The Vacuum Removal Tool is used to remove and insert the MC half valve from a one sided release fixed actuator collar.

**Protective Cover**
The Protective Cover protects the MC half valve when undocked from limited, external influences. The protection cover can be easily fitted and removed from the MC half valve by hand.

- **Material:** Silicon 60 Shore A
- **Colour:** red RAL 3000
Maintenance Tool Box

This Tool-Box includes special keys and tools to maintain the MC Buck® Valves according to the Buck MC Manual.

It includes following items:

- **Socket wrench (7mm)**
  to screw and unscrew the locking device to/from the actuator ring

- **socket wrench (13mm)**
  to adjust/fix the sensors on the pneumatic valves

- **Disc seal installer**
  to lips the disc seal into the disc

- **Lubricant seal**
  to grease the body seal and bearing shell
3.3 Hicoflex® Consumables

**Hicoflex® Charge Bag**

The Hicoflex® Charge Bag comprises a coupling and a PE bag. A handle is incorporated for easy transportation to hang the bag up during discharge.

Following sizes are available:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>x (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>203155</td>
<td>Hicoflex® Charge Bag 1L</td>
<td>400 mm height</td>
</tr>
<tr>
<td>203156</td>
<td>Hicoflex® Charge Bag 5L</td>
<td>480 mm height</td>
</tr>
<tr>
<td>203157</td>
<td>Hicoflex® Charge Bag 10L</td>
<td>565 mm height</td>
</tr>
<tr>
<td>203158</td>
<td>Hicoflex® Charge Bag 15L</td>
<td>635 mm height</td>
</tr>
<tr>
<td>203159</td>
<td>Hicoflex® Charge Bag 25L</td>
<td>775 mm height</td>
</tr>
<tr>
<td>203160</td>
<td>Hicoflex® Charge Bag 50L</td>
<td>930 mm height</td>
</tr>
</tbody>
</table>

**Hicoflex® Charge Bag with flush connector**

The Hicoflex® Charge Bag with flush connector ensures a full yield discharge because of an internal rinsing device.

Following sizes are available:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>x (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>203161</td>
<td>Hicoflex® Charge Bag 5L with flush connector</td>
<td>540 mm height</td>
</tr>
<tr>
<td>203162</td>
<td>Hicoflex® Charge Bag 10L with flush connector</td>
<td>625 mm height</td>
</tr>
<tr>
<td>203163</td>
<td>Hicoflex® Charge Bag 15L with flush connector</td>
<td>695 mm height</td>
</tr>
<tr>
<td>203164</td>
<td>Hicoflex® Charge Bag 25L with flush connector</td>
<td>835 mm height</td>
</tr>
<tr>
<td>203165</td>
<td>Hicoflex® Charge Bag 50L with flush connector</td>
<td>990 mm height</td>
</tr>
</tbody>
</table>
Hicoflex® Adaptor

The Hicoflex® Adaptor is used to connect Hicoflex® Bags to the processor. This adaptor is made from a Hicoflex® coupling and a standard tri-clamp connector.

Hicoflex® Adaptors are available with tri-clamp 2", 4" and 6" according O.D. (BS 4825).

The following sizes are available:

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>x (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>203166</td>
<td>Hicoflex® Adaptor 2&quot; (DN 50)</td>
<td>185 mm height</td>
</tr>
<tr>
<td>203167</td>
<td>Hicoflex® Adaptor 4&quot; (DN 100)</td>
<td>175 mm height</td>
</tr>
<tr>
<td>203168</td>
<td>Hicoflex® Adaptor 6&quot; (DN 150)</td>
<td>170 mm height</td>
</tr>
</tbody>
</table>

Hicoflex® Spray Bag with drain

The Hicoflex® Spray Bag with drain is delivered with a spray nozzle that's suitable for rinsing the adaptors and connectors inside the charging point. Wetting the contaminated surfaces prevents the escape of potent or toxic dust before removal.

Additionally a drain enables the rinsing/wetting of the connectors from below.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>x (approx.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>203169</td>
<td>Hicoflex® Spray Bag with drain</td>
<td>400 mm height</td>
</tr>
</tbody>
</table>

Hicoflex® Sample Bag 400

The Hicoflex® Sample Bag 400 is a hose-shaped bag with a sampling device. After docking the bag, a sample can be taken in a fully contained way. We highly recommend the use of a Hicoflex® Opening Tool Pistol to take product samples.

The approx. volume of sample that can be taken is 5ml.
3.4 Hicoflex® System Components

**Hicoflex® Opening Tool Pistol**

The Opening Tool Pistol is suitable for manual use, such as taking samples from a Hicoflex® Charge Bag and a Hicoflex® Sample Bag 400.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.200.1001</td>
<td>Hicoflex® Opening Tool Pistol</td>
</tr>
</tbody>
</table>

**Hicoflex® Opening Tool with mechanical stop**

The manually operated Hicoflex® Opening Tool, which is attached to our Hicoflex® Stations and Trolleys, can also be supplied and installed separately.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>159033</td>
<td>Hicoflex® Opening Tool with mech. stop</td>
</tr>
</tbody>
</table>

**Hicoflex® Charge Station**

To charge product into a Hicoflex® Bag, we recommend the use of our stainless steel Hicoflex® Charge Station, which comes supplied with an adjustable support platform for the bags.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>209883</td>
<td>Hicoflex® Charge Station 2” (DN 50)</td>
</tr>
<tr>
<td>209884</td>
<td>Hicoflex® Charge Station 4” (DN 100)</td>
</tr>
<tr>
<td>209885</td>
<td>Hicoflex® Charge Station 6” (DN 150)</td>
</tr>
</tbody>
</table>
Hicoflex® Discharge Station

The stainless steel Hicoflex® Discharge Station features a height adjustable bag support, facilitating product transfer from the Hicoflex® Bags.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>209880</td>
<td>Hicoflex® Discharge Station 2&quot; (DN 50)</td>
</tr>
<tr>
<td>209881</td>
<td>Hicoflex® Discharge Station 4&quot; (DN 100)</td>
</tr>
<tr>
<td>209882</td>
<td>Hicoflex® Discharge Station 6&quot; (DN 150)</td>
</tr>
</tbody>
</table>

Hicoflex® Trolley 4"

The Hicoflex® Trolley is a mobile stainless steel frame with a 4" tri-clamp for the manual charging of Hicoflex® Bags.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0157541</td>
<td>Hicoflex® Trolley 4&quot; (DN 100)</td>
</tr>
</tbody>
</table>

Hicoflex® Suction Device 4"

To reduce surface contamination, the Hicoflex® Suction Device can be used to extract airborne particles and dust, down to a level of <1 μg/m³, during docking.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>193550</td>
<td>Hicoflex® Suction Device 4&quot; (DN 100)</td>
</tr>
</tbody>
</table>
Hicoflex® Hicobox

The Hicobox is a unit for use with the Hicoflex® technology in applications where the process area is working under a lower pressure than the surrounding area. Without using the Hicobox system, the flexible bags can collapse due to the negative differential pressure, which in turn stops the material (tablet) flow into the Hicoflex® Bag.

The Hicobox completely encapsulates the Hicoflex® Adapter, Hicoflex® Bag and the Hicoflex® Pneumatic Opening Tool and is put under the same pressure as that in the process area. This ensures that a differential pressure is fully prevented and a material flow (tablets) is guaranteed.

The Hicobox unit comprises a mobile cabinet with single or dual chambers, each suitable for housing a 25 litre Hicoflex® Bag. The dual chamber Hicobox means that when the first Hicoflex® Bag is full, the production can be switched to the second Hicoflex® Bag without halting production.

As the unit is mobile, it can easily be moved around the room to provide access to other areas.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TBC</td>
<td>Hicoflex® Hicobox Single Chamber</td>
</tr>
<tr>
<td>TBC</td>
<td>Hicoflex® Hicobox Dual Chamber</td>
</tr>
</tbody>
</table>
4 TECHNICAL DATA

4.1 Buck Valve Materials

- Product contact metal parts are available in:
  - Stainless Steel 1.4404 / 316L
- Non product contact metal parts are made of:
  - Stainless Steel 1.4301 / 304 (or higher)
- Surface roughness for metal parts (none coated) is:
  - Product contact parts: $Ra < 0.5\mu m$
  - Non product contact parts: $Ra < 1.6\mu m$
- Surface qualities:
  - mechanically polished, welds ground and polished to parent metal
- Elastomers are available in:
  - EPDM white

All product contacted elastomers used for the BUCK® MC valve fulfil the FDA requirement.

4.2 Hicoflex® Materials

The standard material used for Hicoflex® Consumables are:

<table>
<thead>
<tr>
<th>Description</th>
<th>Material</th>
<th>Hicoflex® Consumables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Film (product contact part)</td>
<td>LDPE and LLDPE (Low Density Polyethylene and Linear Low Density Polyethylene)</td>
<td></td>
</tr>
<tr>
<td>Coupling (non product contact parts)</td>
<td>Hard components POM white (Polyoxymethylene)</td>
<td>Hicoflex® Charge Bag</td>
</tr>
<tr>
<td>Coupling (product contact parts)</td>
<td>Soft components TPE white (Thermoplastic elastomer)</td>
<td>Hicoflex® Adaptor, Hicoflex® Spray Bag</td>
</tr>
<tr>
<td>Joint caps (non product contact parts)</td>
<td>PEEK (Polyetheretherketone)</td>
<td></td>
</tr>
<tr>
<td>Safety cap (non product contact parts)</td>
<td>PS (Polystyrene)</td>
<td>Hicoflex® Sample Bag</td>
</tr>
<tr>
<td>Handle (non product contact parts)</td>
<td>PE (Polyethylene) or HDPE (High Density Polyethylene)</td>
<td></td>
</tr>
<tr>
<td>Tri-clamp / tube (product contact parts)</td>
<td>PE (Polyethylene) or HDPE (High Density Polyethylene)</td>
<td></td>
</tr>
</tbody>
</table>

All Hicoflex® parts in contact with the product are FDA-compliant.
The standard material used for the Hicoflex® System Components are:

<table>
<thead>
<tr>
<th>Description</th>
<th>Material</th>
<th>Hicoflex® System Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal part (non product contact parts)</td>
<td>Stainless steel (min. 1.4301 / ANSI 304)</td>
<td>Hicoflex® Opening Tool</td>
</tr>
<tr>
<td>Metal parts (product contact parts)</td>
<td>1.4401/ANSI 316 L</td>
<td>Hicoflex® Charge Station</td>
</tr>
<tr>
<td>Plastic parts (non product contact parts)</td>
<td>POM black (Polyoxymethylene)</td>
<td>Hicoflex® Discharge Station</td>
</tr>
<tr>
<td>Plastic parts (non product contact parts)</td>
<td>PUR (Polyurethan), coated (FDA)</td>
<td>Hicoflex® Trolley</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hicoflex® Suction Device</td>
</tr>
</tbody>
</table>

4.3 Heights and Weights

<table>
<thead>
<tr>
<th>Height in mm</th>
<th>DN100</th>
<th>DN150</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUCK® MC half valve</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>BUCK® MC half valve, tri-clamp flange</td>
<td>80</td>
<td>80</td>
</tr>
<tr>
<td>BUCK® MC Lite actuator ring</td>
<td>90</td>
<td>90</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight in kg</th>
<th>DN100</th>
<th>DN150</th>
</tr>
</thead>
<tbody>
<tr>
<td>BUCK® MC MC half valve</td>
<td>3.0</td>
<td>4.8</td>
</tr>
<tr>
<td>BUCK® MC MC half valve, tri-clamp flange</td>
<td>4.6</td>
<td>6.9</td>
</tr>
<tr>
<td>BUCK® MC Lite actuator ring</td>
<td>3.2</td>
<td>3.9</td>
</tr>
</tbody>
</table>
4.4 Temperature and Pressure Range

- Temperature range for the actuator ring: 0°C to 60°C
- Temperature range for the MC half valve in operation: 0°C to 60°C
- Temperature range for the MC half valve during storage: 0°C to 90°C
- Discharge and storage of powder at atmospheric pressure
- Tightness MC half valve in closed position with seals in new and clean condition: vacuum - 0.2 bar(g)

Hicoflex® Consumables are made solely from plastics like POM, thermoplastic elastomers and LDPE film for which reason the temperature range in which it can be operated is limited.

Hicoflex® Consumables shall not be held in environments or handle solids materials below temperatures of -20°C or exceed temperature of to +50°C.

Neither positive nor negative pressure can be applied to Hicoflex® Consumables. A special device developed by us to equalise the different pressure levels is available on request.

For storage of empty bags the following is recommended:

- Maintain storage in dry conditions and keep storage temperature between 15°C and 35°C at a humidity of 45% RH – 75% RH
- Protect the Hicoflex® Consumables from UV radiation
- Prior to usage of the Hicoflex® Consumables, keep it for 48 hours under processing conditions in order to acclimatize
4.5 BUCK MC Valve ATEX 94/9/EG

MC portable actuator rings are manually operated with no electrical device. Therefore MC portable actuator rings are not subject of ATEX.

Explosion protection "Avoidance of effective ignition sources"

BUCK® valves with white EPDM seals can be safely used in Category D (Zone 21/22) areas as long as there is no pneumatic conveying and the product drops from a height less than 5 meters.

The interaction of solids (dust / granulate) and non-conductive elastomers can generate electrostatic "brush discharges". According to TRBS 2153 and CLC/TR50404 and IEC/TS 60079-32-1 these "brush discharges" cannot ignite solids (dust / granulate).

Electrostatic "propagation brush discharges" can ignite solids (dust / granulate). However, "propagation brush discharges" can be excluded in this context, when there is no pneumatically conveying and when the product drops from a height less than 5 meters (TRBS 2153 and CLC/TR50404 and IEC/TS 60079-32-1; "GPS Code of Practice: Ignition source due to static electricity, Dr. M. Glor SWISSI" (15.10.2008)).

The characteristics of the handled active solids material (powder) is based on the following:

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum ignition energy with/without additional inductivity (MIE)</td>
<td>≥ 1 mJ</td>
</tr>
<tr>
<td>Specific powder flow resistance</td>
<td>arbitrary (Ωm)</td>
</tr>
<tr>
<td>Ability of spontaneous degradation</td>
<td>none</td>
</tr>
<tr>
<td>Reaction with water or flammable solvents</td>
<td>none</td>
</tr>
</tbody>
</table>

For Category G (Zone 1 or 2 inside and/or outside) the valve can be equipped with antistatic, dissipative seals, black. In addition for Zone 0 "inertisation (e.g. N2) is necessary.

All Buck Valve components and accessories meet the appropriate European standards

**Maintenance**
Damaged or worn elastomeric parts have to be replaced according to maintenance instructions.

**Various**
The valve system may not to be exposed to flames or hot gases. Possibly effects of exothermic reaction including self-ignition of processed material has to be a part of user’s risk assessment.
4.6 Hicoflex® ATEX 94/9/EG

Explosion protection "Avoidance of effective ignition sources"

Non-conductive / dissipative plastic bags can generate by interaction with solids / (dust / granular) electrostatic "brush discharges".

According to TRBS 2153 and CLC/TR50404 these "brush discharges" cannot ignite solids (dust / granular); however, this is not significant for hybrid mixtures.

Electrostatic "propagation brush discharges" can ignite solids (dust / granular); however, "propagation brush discharges" can be excluded in this context, as long as there is no pneumatically conveying and as far as the product drops from a height less than 5 meters (TRBS 2153 and CLC/TR50404; "GPS Code of Practice: Ignition source due to static electricity, Dr. M. Gior SWISSI" (15.10.2008)).

The characteristics of the handled active solids material (powder) is based on the following:

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<td>Reaction with water or flammable solvents</td>
<td>none</td>
</tr>
</tbody>
</table>
4.7 Documentation

We supply one hard copy of the BUCK® valve documentation data book and one electronic version on CD of following documents:

- Operating and maintenance instructions
- Part list
- Dimension drawings
- Certificate of compliance with the order (EN 10204 2.2) for all product contacted metal parts
- FDA certificate of conformity for all product contacted seal materials

4.8 Marking

The valve will have acid etched marking with following information:

- CE Marking (where necessary)
- Name and address of manufacturer
- ID number for each valve