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System/Product	ATLAS/Globe
Model/Module	BOV, Oil Pipes, Reaction Vessel
Subject Type	Atlas and Globe O-RING seal Information.
Subject Version	1.0
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Atlas and Globe O-RING seal Information.

The following sizes (i/d x cross section) are used on the Atlas and Globe batch reactor systems.

9mm Bottom Outlet Valve

6 x 2 - 9mm B.O.V. Top O-ring (1 off per valve) - Part No.1802042

10.82 x 1.78 (BS 013) – 9mm B.O.V. Stem seals (2 off per valve) - Part No.1802152

20mm Bottom Outlet Valve

17 x 3 - 20mm B.O.V. Top O-ring (1 off per valve) – Part No.2102273

19 x 3 - 20mm B.O.V. Stem seals (2 off per valve) – Part No.2102275

Oil Connector

22.23 x 2.62 - face seal (1 off per connector) – Part No.1801989

28.3 x 1.78 (BS024) – radial seal (1 off per connector) – Part No.1802010

Main Reactor Vessel Seal

89 x 4.5 FEP encapsulated Silicon – Part No. 2101016

89 x 3.8 FFKM – Part No. 2101543

Notes

Selection of suitable Bottom outlet valve seal material is limited to its requirement for a wide variety of chemical compatibility and so an FFKM material will obviously be first choice for the majority of applications. However FFKM is limited to its low temperature range of typically -15/-20°C.

Suitable Oil Connector seal choice is currently FKM, however for extreme temperature coverage other more suitable materials should be selected.

The vessel flange seal material choice is covered adequately at present and depends mainly whether the vessel is being used under vacuum conditions.

Syrris field data

Atlas Low Temperature Test

Omar carried out a low temperature test using an Atlas vessel and Huber circulator to achieve a low temperature of -80°C. Seal materials used on site where Klingerseal material fitted to the oil pipe connections and FKM (Viton) fitted to the bottom outlet valve stem.

Aztra Zeneca – India - Globe

Syrris supplied both 20mm and 9mm B.O.V. seal kits manufactured from FKM (Viton) to the customer who requested that he needed a set of seals to operate at temperatures down to -80°C. The customer was however informed that the chemical compatibility of this material was severely limited.

Aseptic – Malaysia

Shameer gave the distributor a set of oversize oil connector face seal (1801989) o-rings to solve a customer’s issue of leaking circulator fluid at 150°C from one of the oil connections. It is suspected that the customer’s originally supplied seal had been damaged or possibly even lost.

Other Info

During the initial development of Atlas a material was selected for low temperature operation and for use as a Face Seal on the oil pipe connections. This material referenced as ASTRA was supplied by Precision Polymer. Visually it appears to be a PFA encapsulated metal spring type O-ring.

Selection of Oil Pipe connection seals for High and Low Temperatures.

The ideal material points towards a Silicon Grade [S60R](#) that has a temperature range of -60°C to +250°C. based on a media selection of Silicon Oil and Ethanol using PPE’s o-ring compatibility wizard.

Chemical Compatibility & Material Selector Wizard

STEP 3

The table below shows the typical compatibility score for each elastomer/plastic material type against the individual chemicals you previously selected. Refer to the key (right) for an explanation of the scoring system.

To proceed to the next step, select the material types which score well by checking the tick boxes.

Tip: To export the results into a spreadsheet, click on the 'Export to Excel' button below.

	ELASTOMERS (high - low performance)														PLASTICS						
	FKM (Viton)	FKM	FKM	NBR	FVMQ	EPOK	NIR	VMQ	CR	ACM	ECO	AEM	CSM	PI	EPDM	NR & IR	PFA	PPE	PEEK		
Select >	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Minimum Temperature °C	-15	-25	-40	-30	-60	-50	-50	-60	-60	-25	-50	-35	-35	-50	-50	-50	-	-	100	100	100
Maximum Temperature °C	225	290	275	175	200	175	125	260	110	135	150	135	110	110	100	100	200	265	200		
Overall Compatibility Rating	1	1	1	2	2	1	2	4	1	4	2	2	1	1	1	1	--	1	1	1	
Ethanol	1	1	1	2	1	1	2	1	1	4	2	2	1	1	1	1	--	1	1	1	
Silicone oil	1	1	1	1	2	1	1	4	1	1	1	1	1	1	1	1	--	1	1	1	

Key
1 Excellent
2 Good
3 Doubtful
4 Do not use
-- No test data
* Contact us.

Note: Chemical ratings shown are based on ambient temperatures. Contact our technical department for accurate chemical compatibility at lower or higher temperatures.

Export to Excel
 < BACK NEXT >