

ANNEX1 MCC, Investigation of alternatives for sealing zeolite membranes

A comparison was made between a grease containing PTFE/PFPE (Uniflor 8622) and an alternative RTV rubber (Shin-Etsu Chemical KE-45) as a seal for the zeolite membrane.

As a result, as shown below, the alternative RTV rubber showed flux loss at low moisture concentrations (Fig.1) and red ink penetration into the seal area (Fig.2). Therefore it was determined that it was not possible to replace the existing grease.

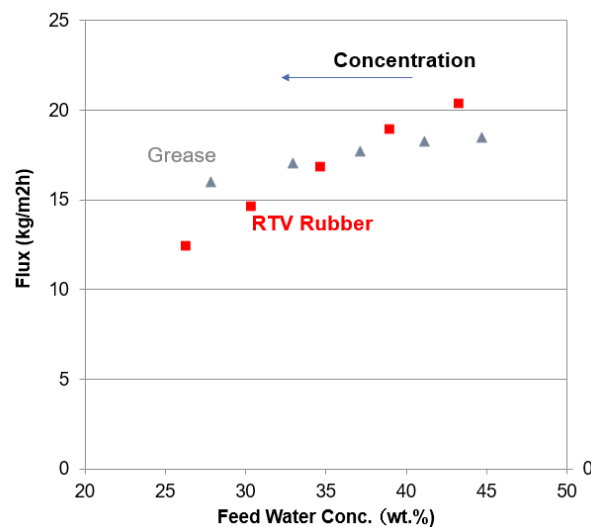


Fig.1 PV130°C, EtOH dehydration concentration test on RTV rubber

ZX2+RTV Rubber

AC immersion test (167° C, 100% or 90%EtOH)
After 2 days of immersion
Vacuum-pulled red ink test

↓ EtOH Conc.



Large amount of ink infiltration

ZX2+Grease

AC immersion test (167° C, 100% EtOH)
After 4 days of immersion and an additional 2 days
of immersion (equivalent to 6 days)
Vacuum-pulled red ink test



Only slight infiltration to outer/inner tube boundary.

Fig.2 PV130°C, Appearance of seal after durability test (RTV, grease comparison)