

HLWYM HEmails

From: Osvaldo Pensado
Sent: Wednesday, March 07, 2007 1:05 PM
To: Christopher Grossman; [REDACTED]
Cc: Tae Ahn; Ronald Janetzke; David Pickett; Timothy McCartin; James Winterle
Subject: SFWettedFraction?

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Fellows,

Tae Ahn has consulted the literature and arrived at the conclusion that there is no sufficient technical basis to assume low values of the parameter SFWettedFraction. Hydration could play a role; the spent fuel can dissolve at considerable rates under hydrated conditions. It appears that hydration alone can change the exposed surface area (causing an increase in the effective dissolution rate).

Accordingly, it is wiser to set the SFWettedFraction with the same range as the proposed range for the MECH waste packages: uniform(0.033, 1.0)

Originally, I recommended not to change the SFWettedFraction for general corrosion, faulting, and igneous WPs (before was uniform(0.0, 1.0)). Now, I do not see any reason why a lower bound is allowable for those WPs. Therefore, I recommend the same distribution for all WP types. The low bound of 0.033 corresponds to a exposed surface fraction of 0.01 (order of magnitude guess on the low bound). In practice uniform(0.0, 1.0) or uniform(0.033, 1.0) make no difference, but I prefer a better defined low bound to avoid cases where the SFWettedFraction could be so small that the waste form lasts forever (e.g. billions of years).

I recommend to still consider correlations of SFWettedFraction to seepage factors. These correlations allow for consideration of cases of WP with small openings and small values of the SFWettedFraction.

In summary, these are my recommendations for tpa.inp:

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**
uniform
SFWettedFraction_Initial
0.033, 1.0
**

uniform
SFWettedFraction_LC
0.033, 1.0
**

uniform
SFWettedFraction_MECH1
0.033, 1.0
**

uniform
SFWettedFraction_MECH2
0.033, 1.0
**

uniform
SFWettedFraction_FAULT
0.033, 1.0
**

uniform
SFWettedFraction_VOLCANO
0.033, 1.0
**
```

uniform
SFWettedFraction_Corrosion
0.033, 1.0
**

correlateinputs
InitialSeepageReductionFractionInitiallyDefWP
SFWettedFraction_Initial
0.9
**

correlateinputs
InitialSeepageReductionFractionByMechFailedWP
SFWettedFraction_MECH1
0.9
**

correlateinputs
InitialSeepageReductionFractionByMechFailedWP
SFWettedFraction_MECH2
0.9
**

correlateinputs
InitialSeepageReductionFractionLC
SFWettedFraction_LC
0.9
**

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