

# Asphalt Binders and Aging 20Hr or 40Hr PAV

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# Asphalt Binder Aging

- There can be no Binder Fatigue Criteria
- Need to capture embrittlement
- The current criteria does not capture embrittlement
- New Criteria evaluating embrittlement
- Are longer aging times needed?
- Binder aging ratios may capture the same issues without longer aging times.

# Input to task group

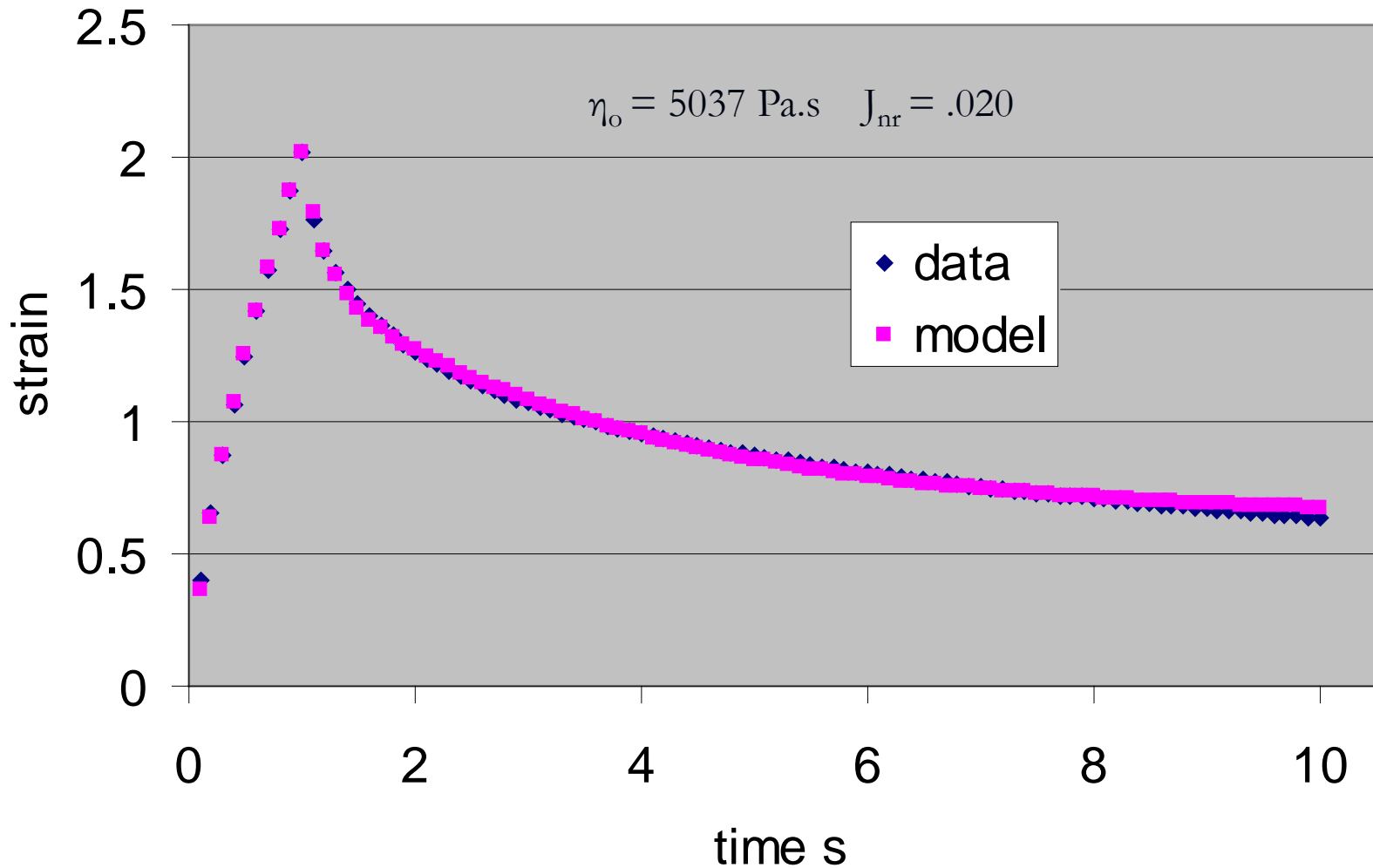
- I comment on aging to task group.
  - Running BBR on RTFOT material can be a challenge.
- Other approach run GR on RTFOT and PAV, run  $\Delta T_c$  on 20hr PAV if close to -5 run 40hr PAV is GR aging ratio less and  $\Delta T_c$  less than -3 no 40hr PAV. If GR aging ratio high and  $\Delta T_c$  -3 run 40 hr PAV.

# Multi-Stress Creep and Recovery Test Method New Specification

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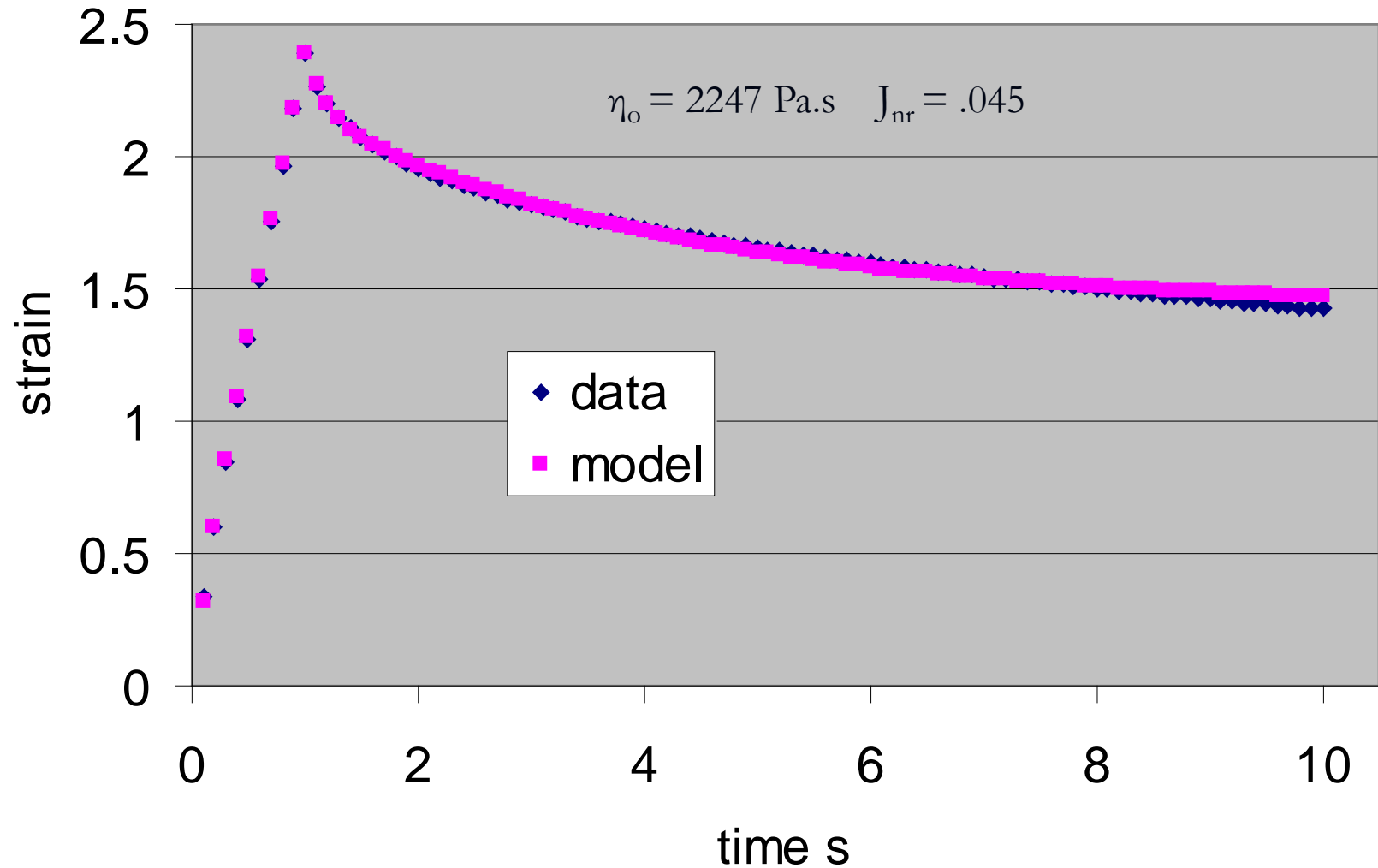
# 70-28 Elvaloy 3.2 kPa 58C

3 element Burgers Model



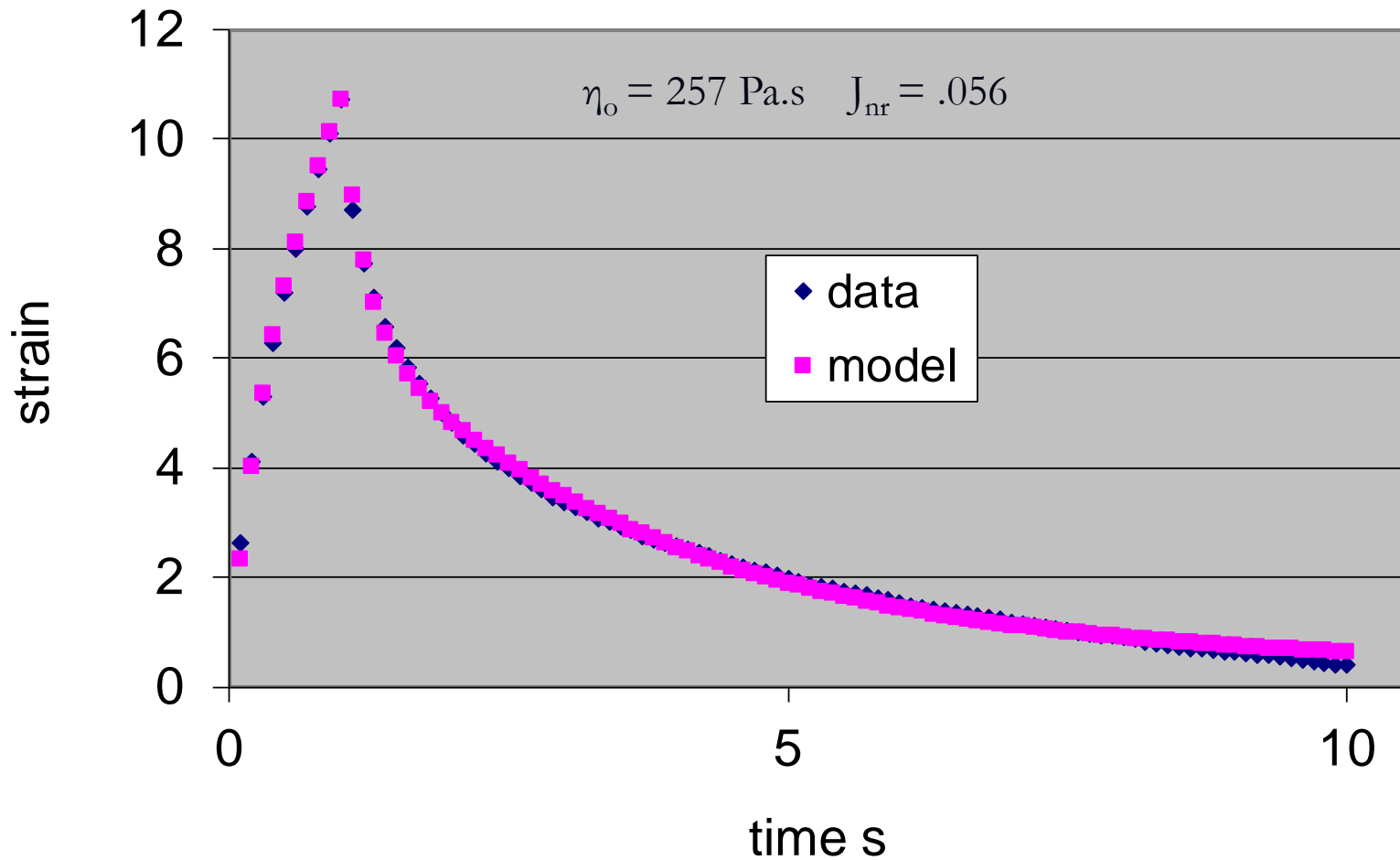
# 70-28 Latex 3.2 kPa 58C

## 3 element Burgers Model



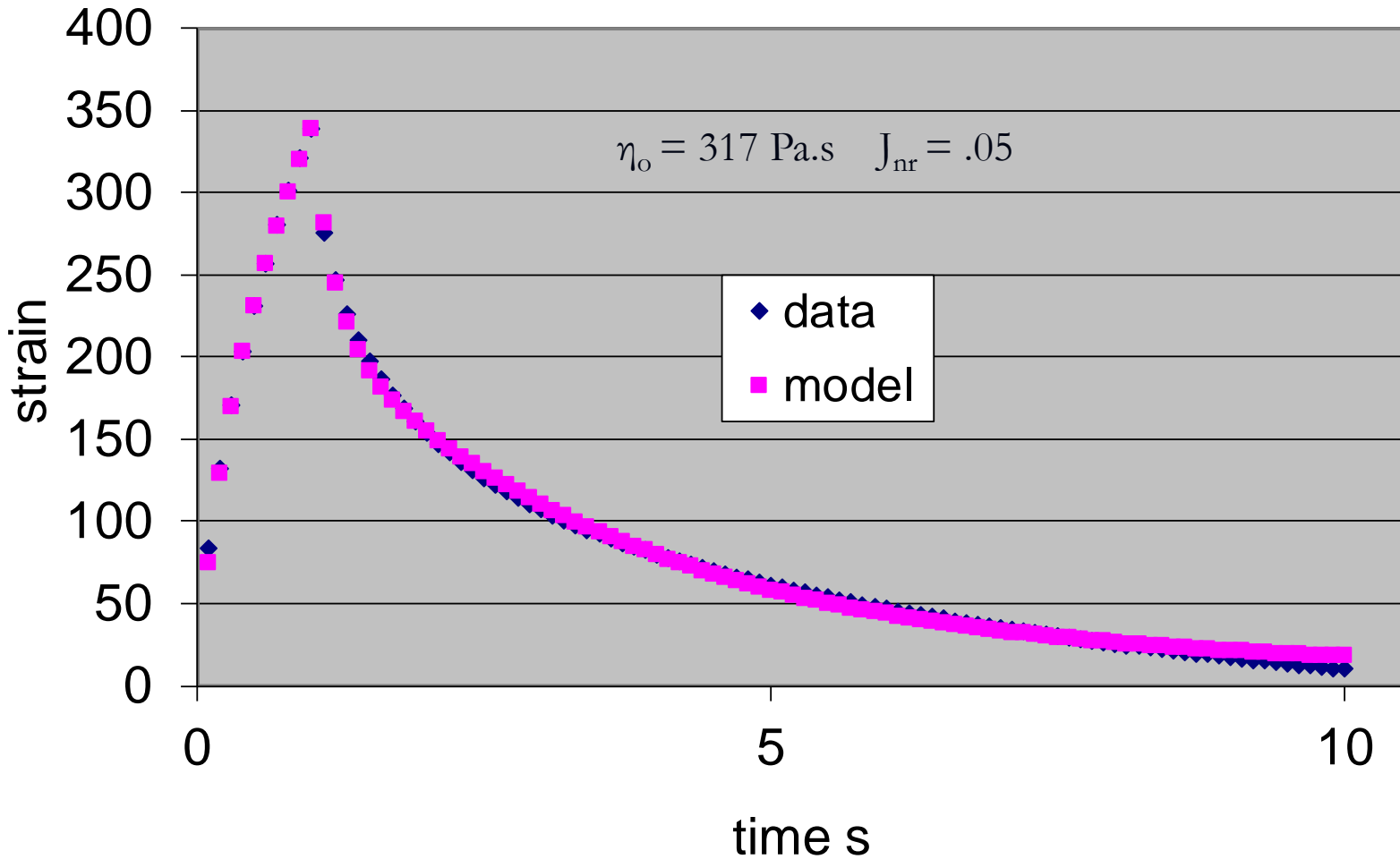
# 64-34 0.1 kPa 58C

## 3 element Burgers Model



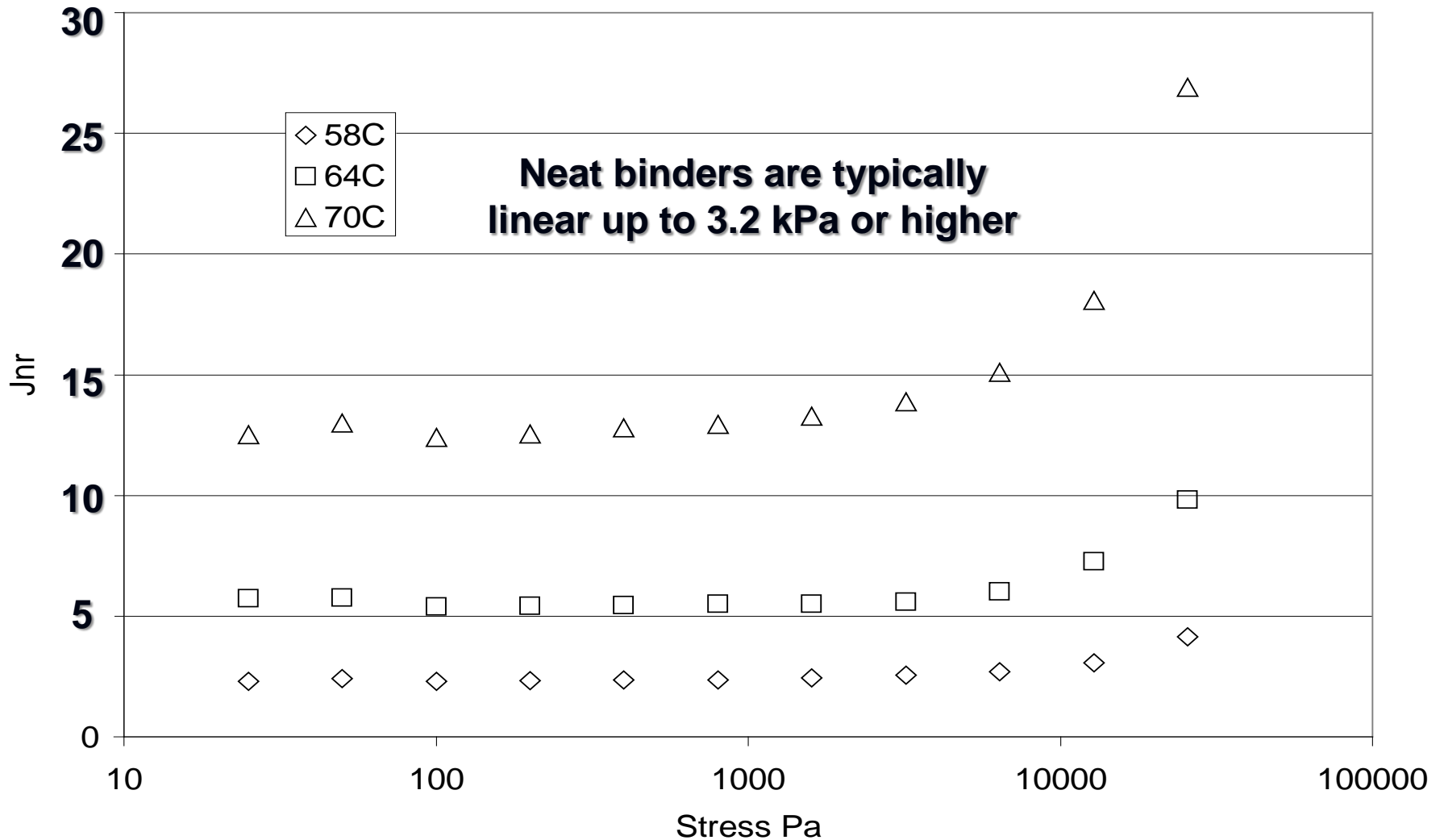
# 64-34 3.2 kPa 58C

## 3 element Burgers Model

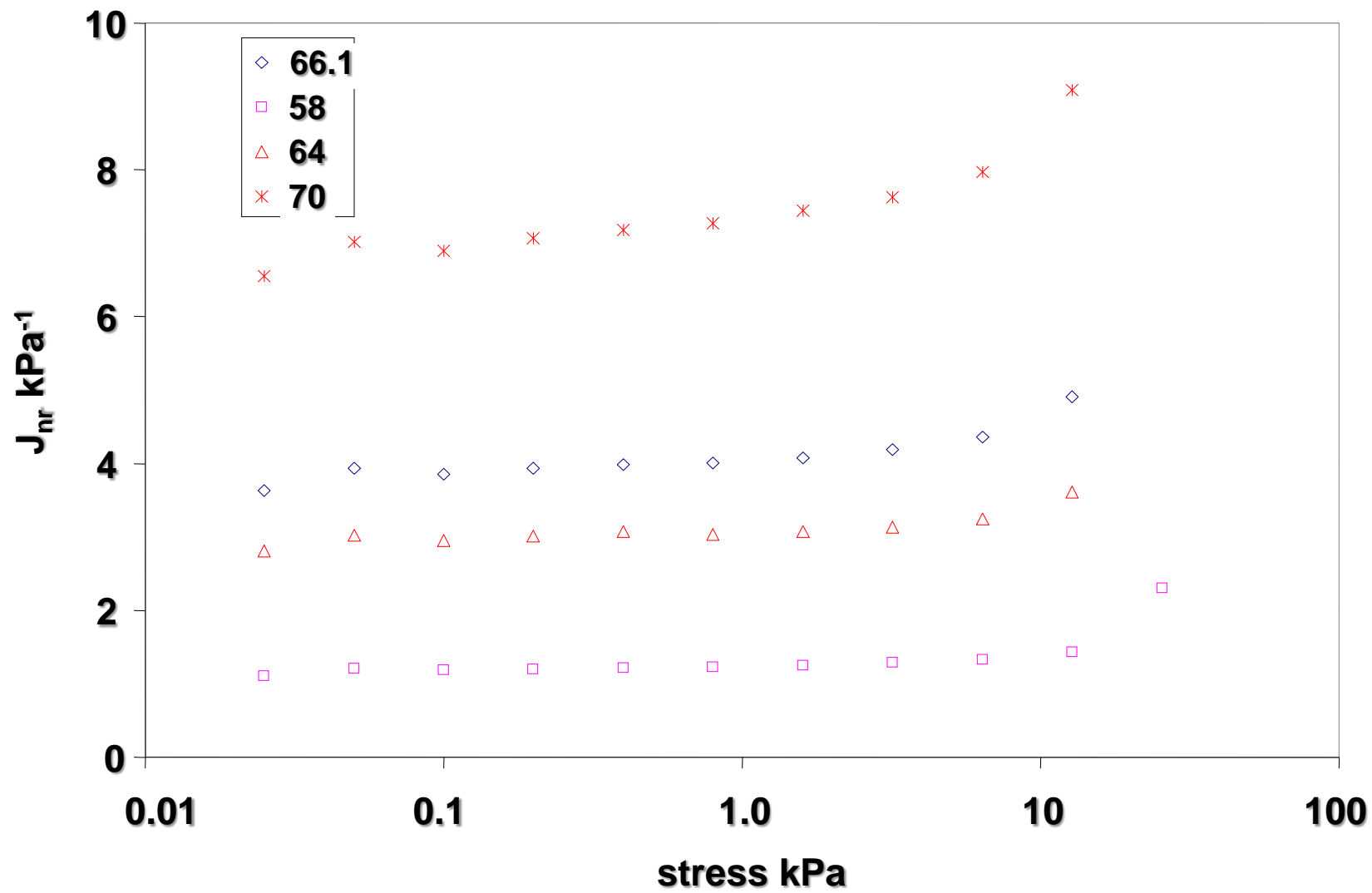




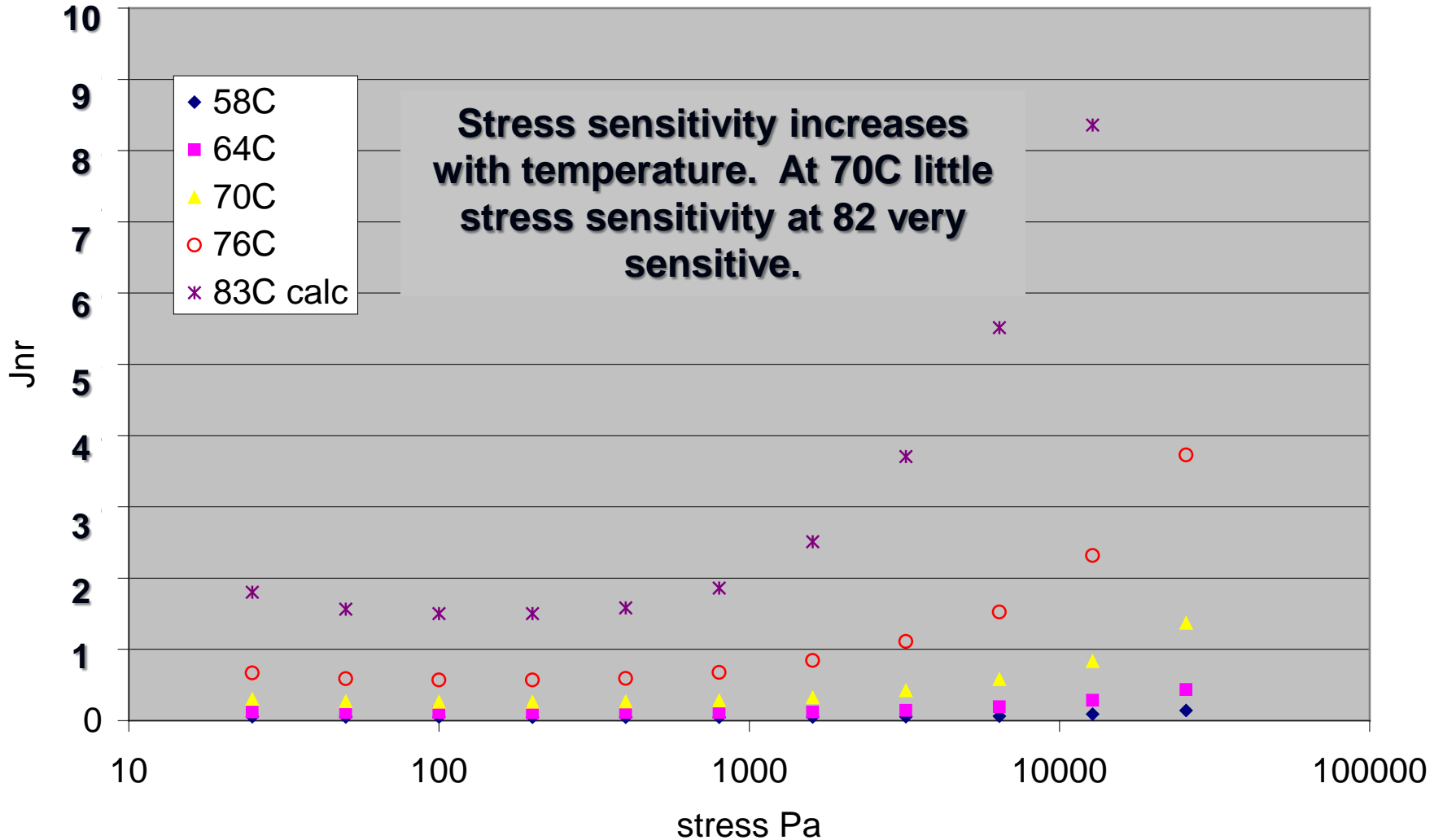
# Neat PG58-28 at multiple temperatures



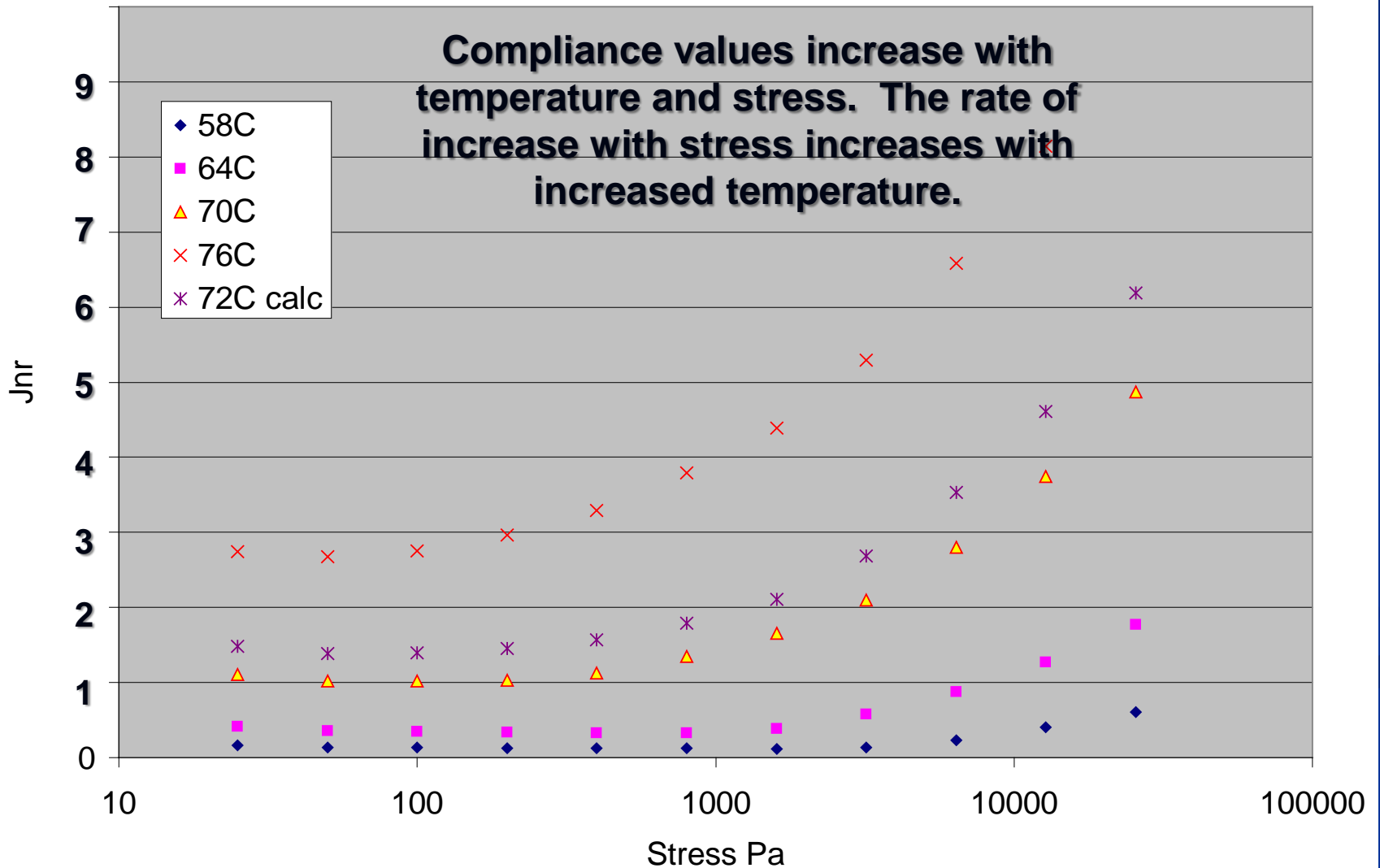
# BBRS3 PG 64-22



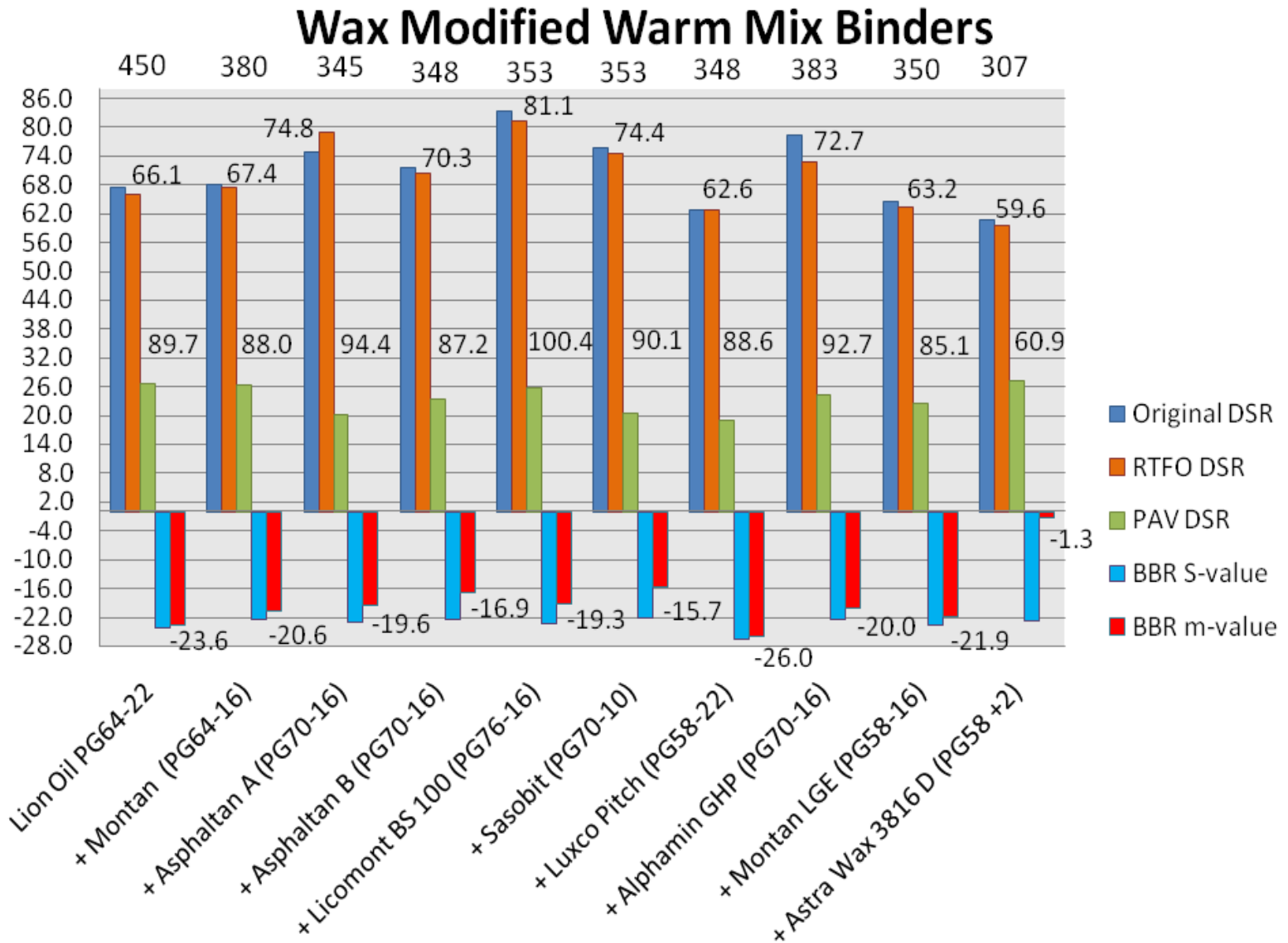
# PG 82-22



# SBS PG 70-28 SBS

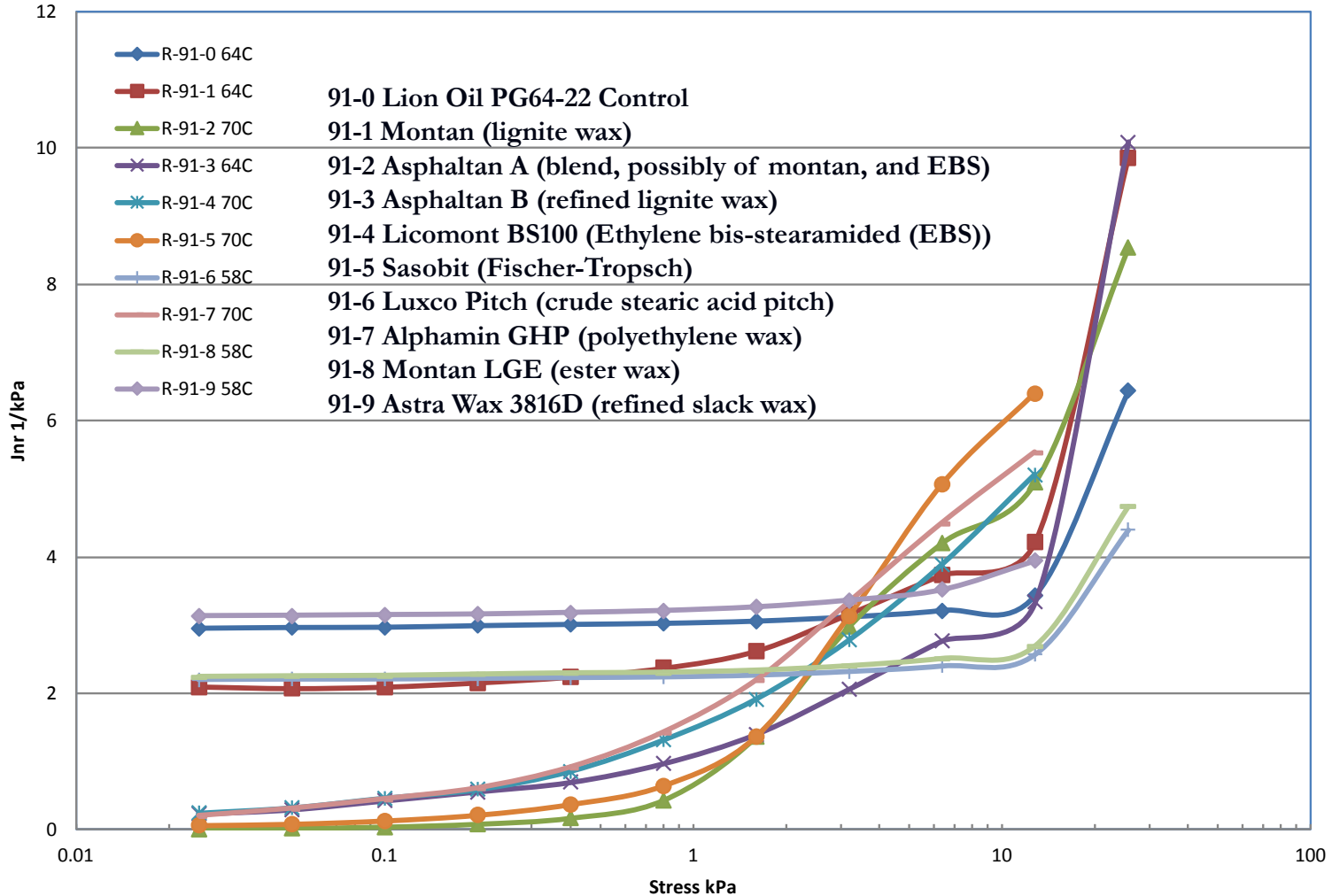


# ETG Wax study

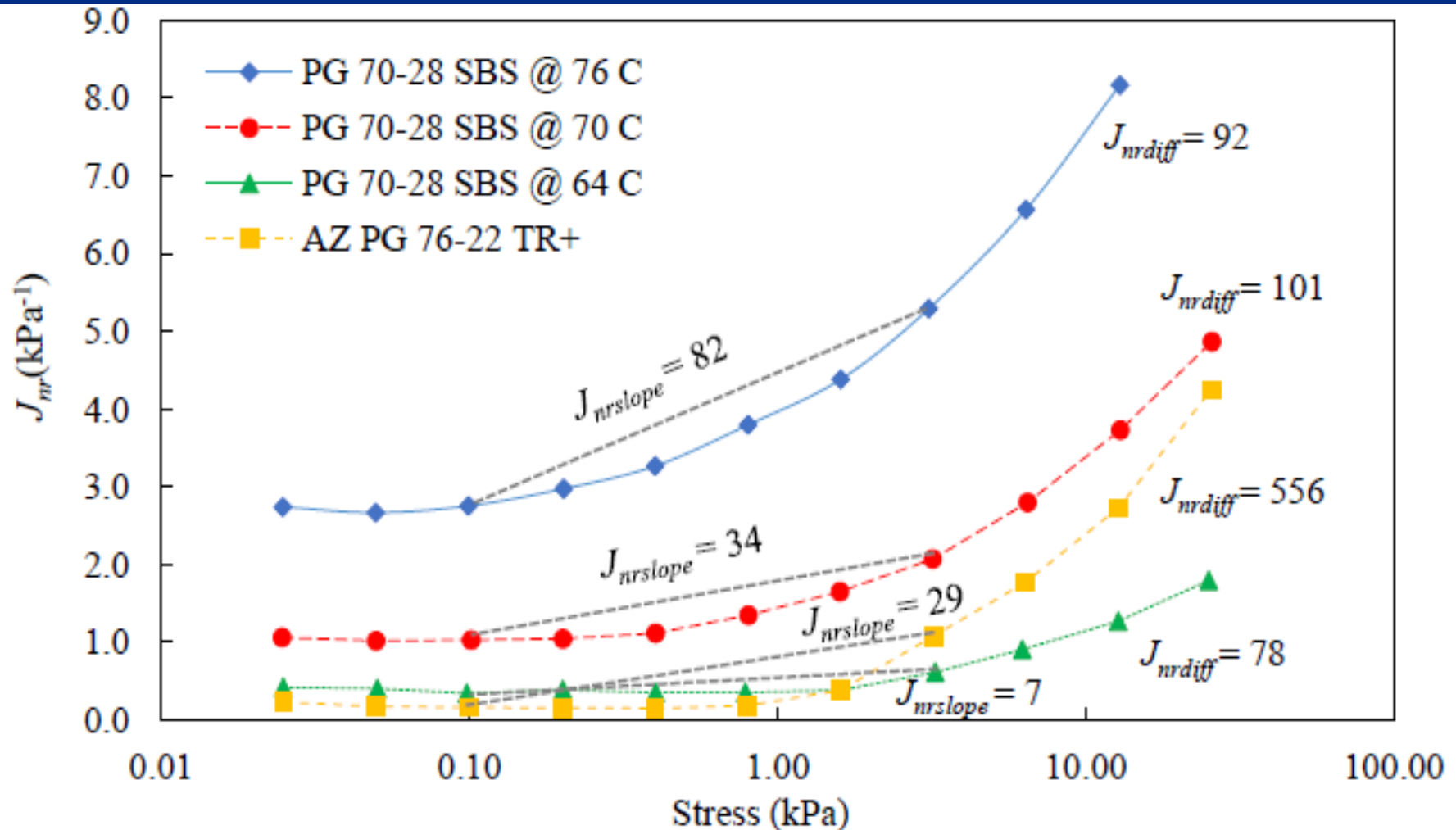


# ETG Wax study

Chart Title



# New Arizona State Procedure



# Correction of $J_{nr}$ Diff

- Increase the low stress from .1 to .8 kPa still in the linear range for most AC's
- Consider going to  $J_{nr}$  slope Arizons procedure.