



Institute of Refractories Engineers

UNDERSTANDING TECHNICAL DATA

IRE Training Day
25 September 2008

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Understanding Technical Data

- Tests and Test Methods
 - Quality Control Tests
 - Product Assessment Tests
- Data Sheet vs Specification
- User Requirements
 - Maximum Service Temperature
 - Classification Temperature
- Case History



Strength Tests

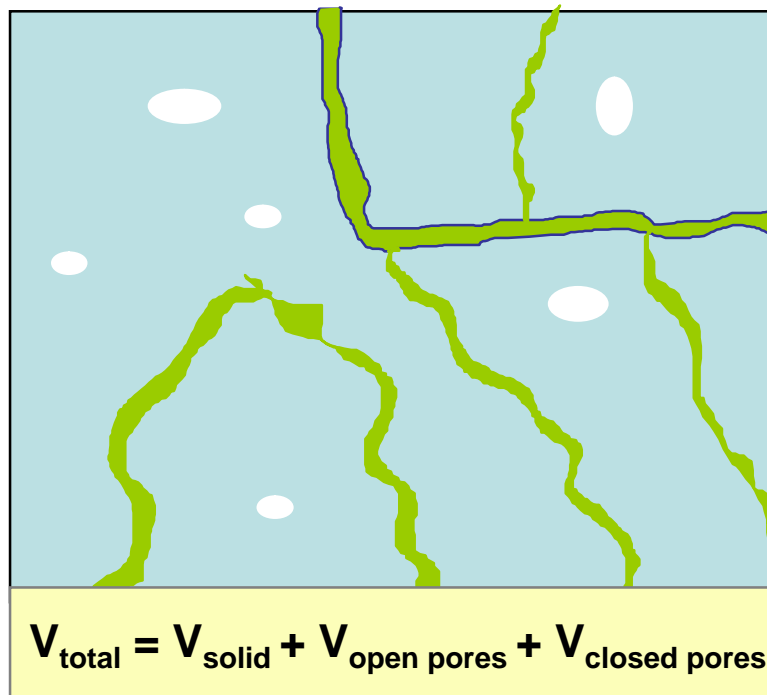
Cold Crushing Strength

Bend Strength (MoR)





Density & Porosity



Open Porosity



Closed Porosity

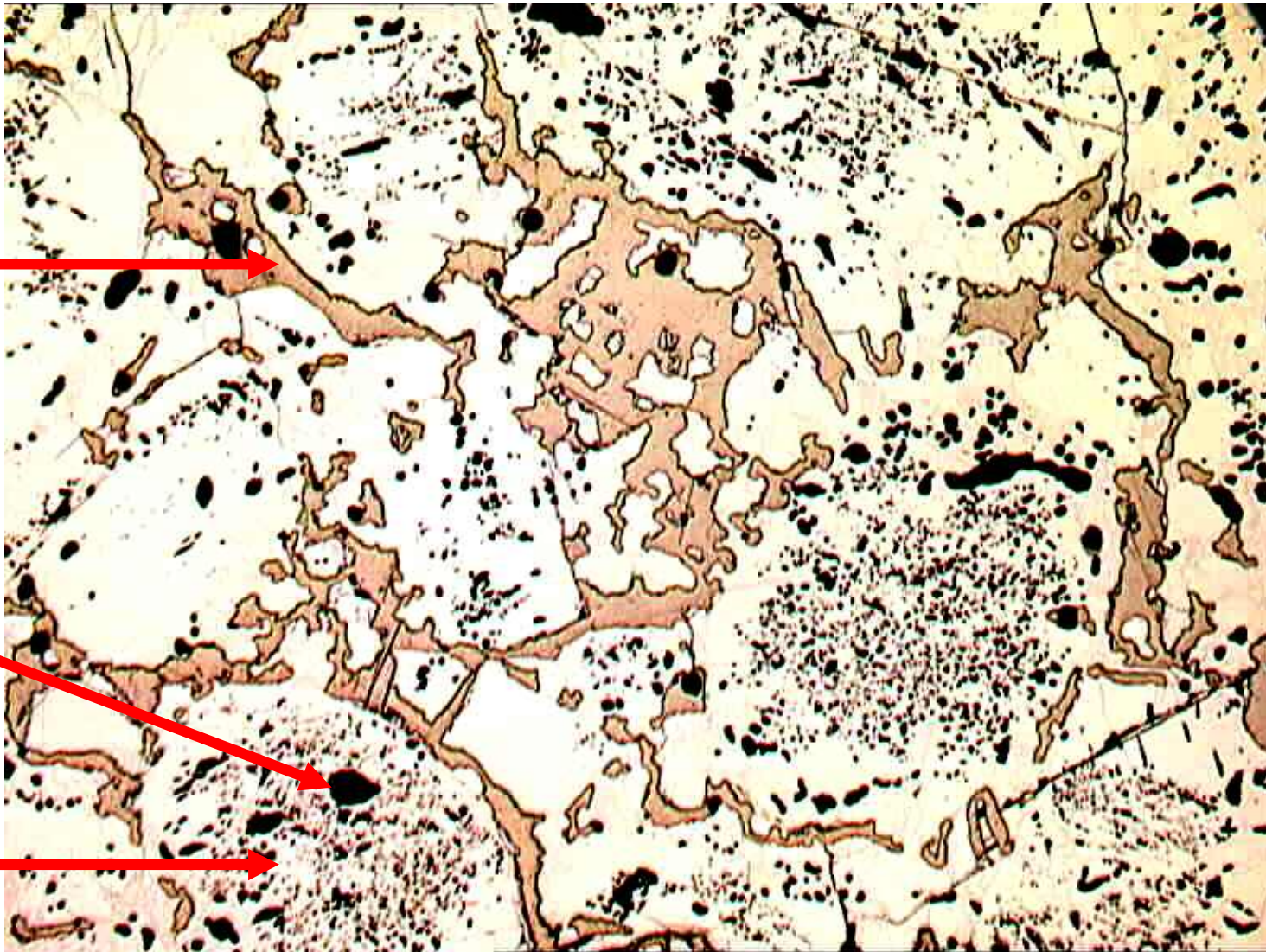


Density & Porosity

Open
Pore

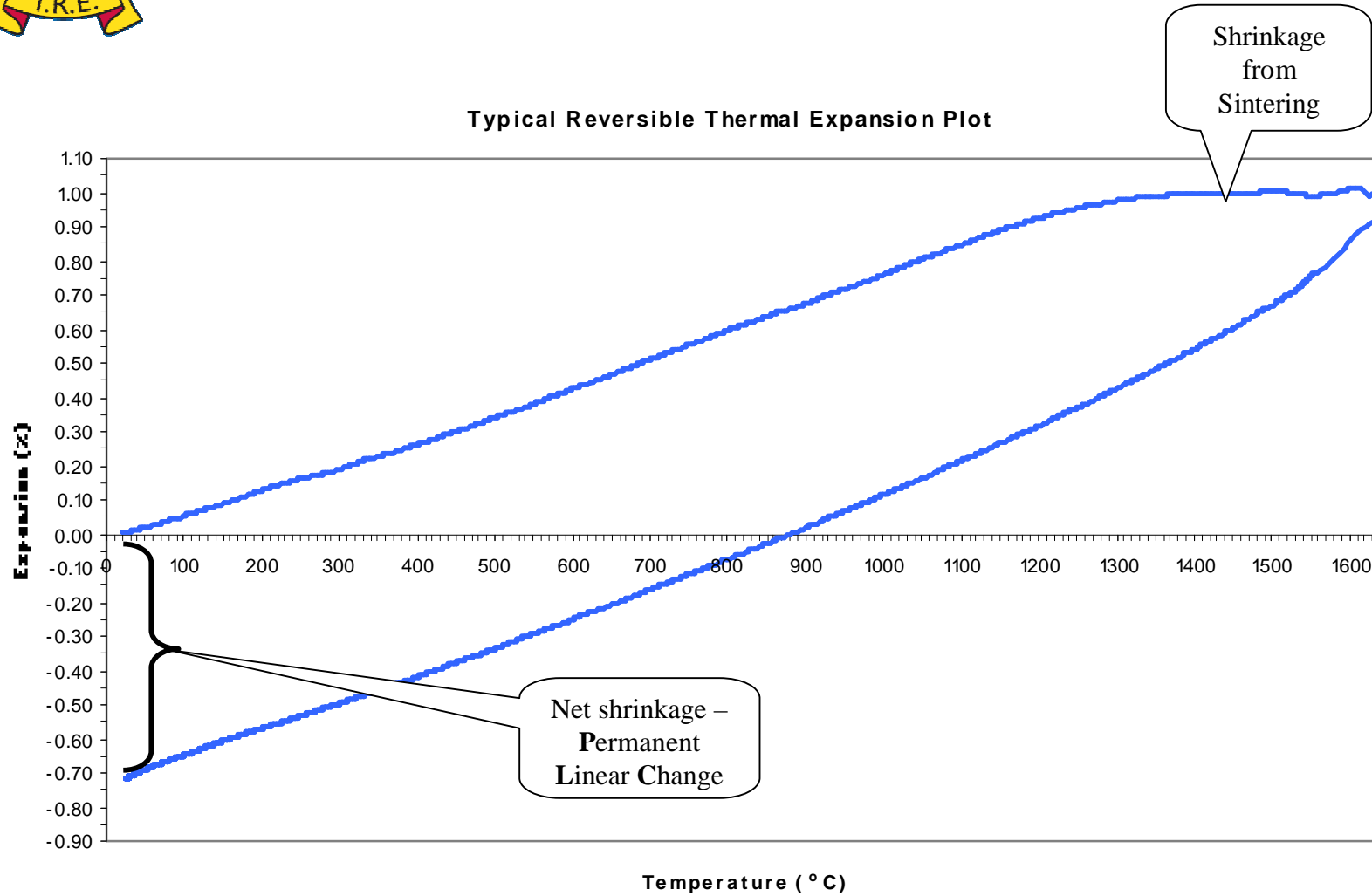
Closed
Pore

Grain





Permanent Linear Change





Product Assessment Tests

Strength at High Temperature

- Hot Bend Strength
- Softening Temperature (Refractoriness, RUL)
- Effect of Time (Creep)

Chemical Attack

- CO
- Alkali
- Slag
- Finger Dip Test

Thermal Properties

- Thermal Expansion
- Thermal Conductivity
- Thermal Shock Resistance

Chemical Properties

- Chemical Analysis
- X-Ray
- Microstructure (Optical, SEM)



Sources of Data

Data Sheets

Material Specification (Product Definition)

Mixing Instructions

Material Safety Data Sheet

Manufacturing Specification vs Functional Description



Data Sheet vs Specification

Data Sheet

The test data shown are based on average results of control tests and are subject to normal variation on individual tests. Accordingly, test data cannot be taken as establishing maximum or minimum specifications.

Material Specification

Specification has limit values which the manufacturer guarantees to meet. Limit value must be different from typical value,
eg If typical is 1000, limit might be >900



Thank You For Your Attention