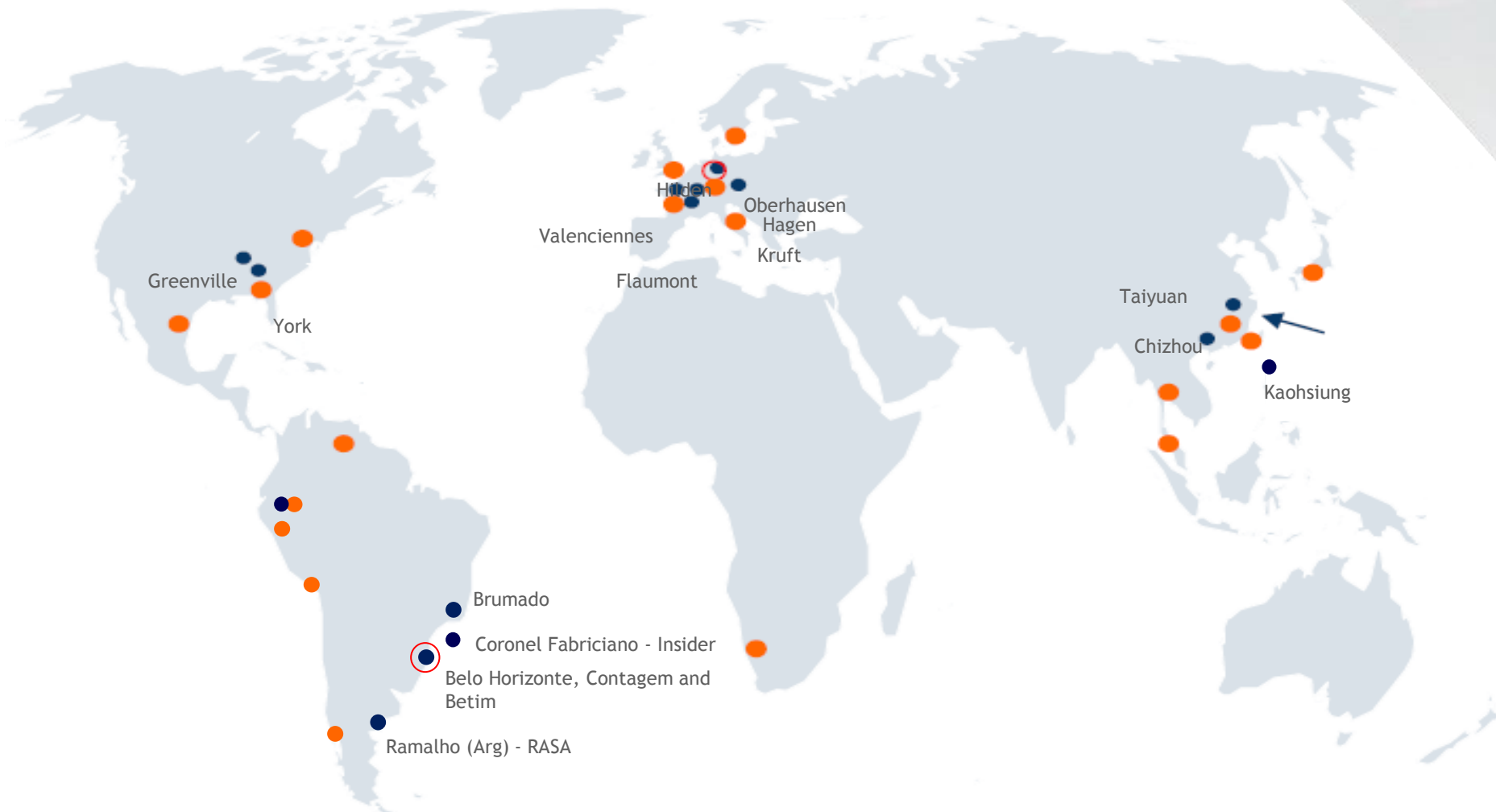


SELECCION DE REFRACTARIOS PARA ACERIA ELECTRICA

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www.magnesita.com



- Plantas
- Oficinas de vendas
- Oficinas Central

14 UNIDADES INDUSTRIALES

Magnesita



Brasil (~ 300 años)

Dolomita



Brasil (~ 30 años)
EUA (~ 50 años)
Europa (~ 50 años)
China (~ 50 años)

Alumina



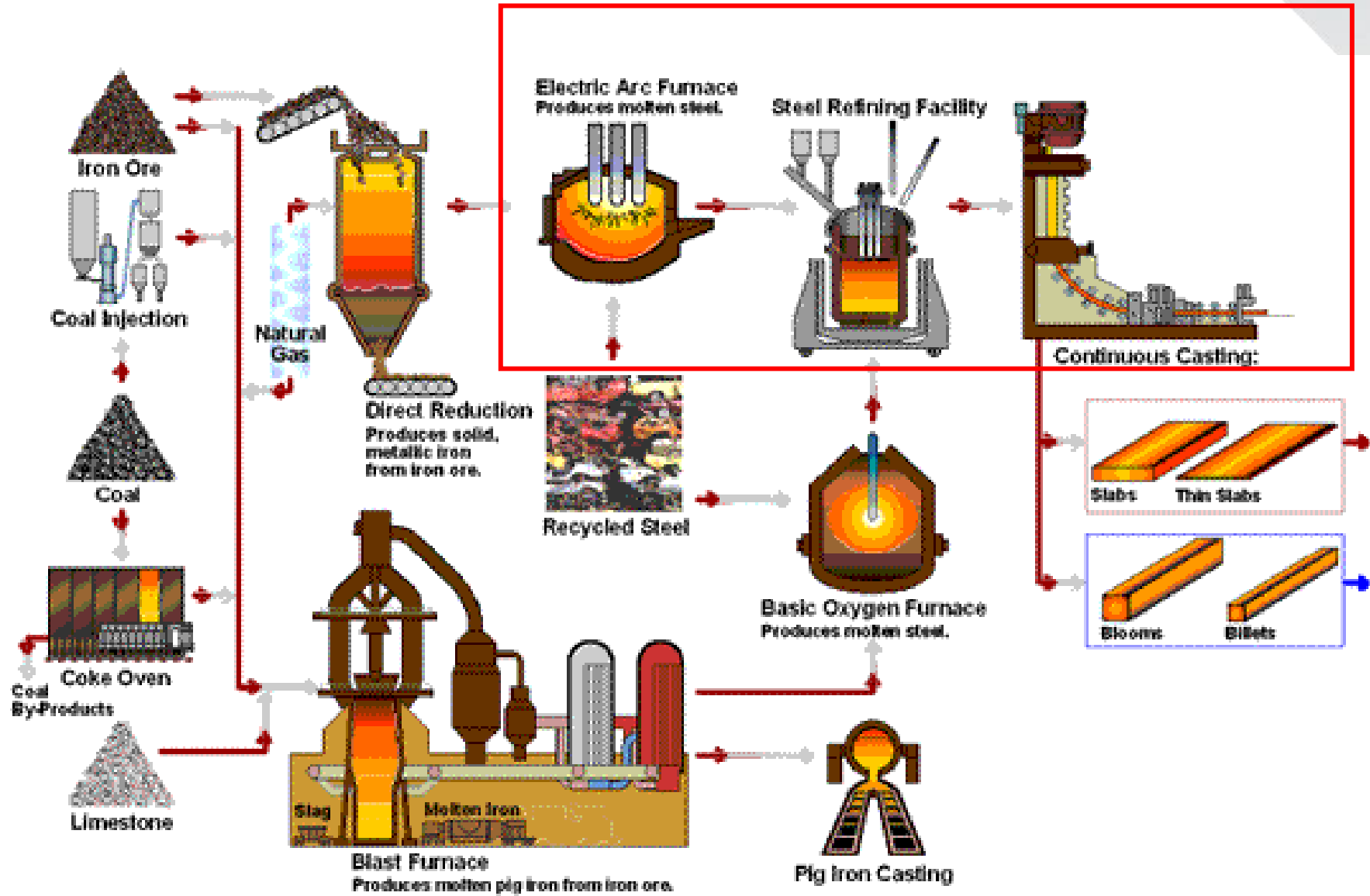
Brasil
45% Al_2O_3 (#1: 24 años)
45% Al_2O_3 (#2: 64 años)
70% Al_2O_3 150 años

Cromita

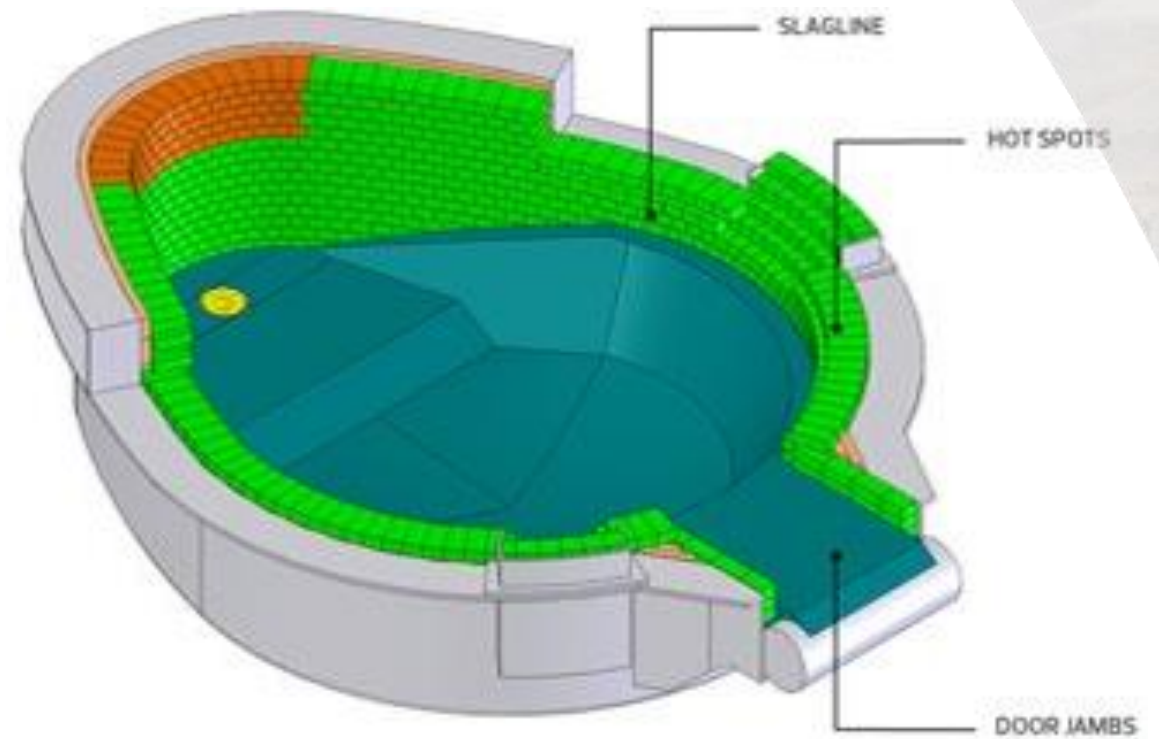
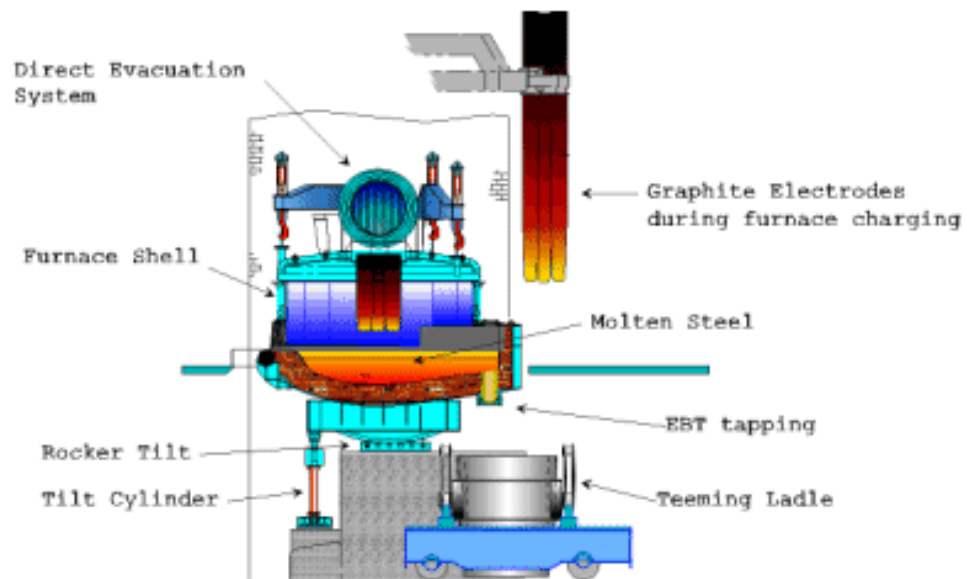
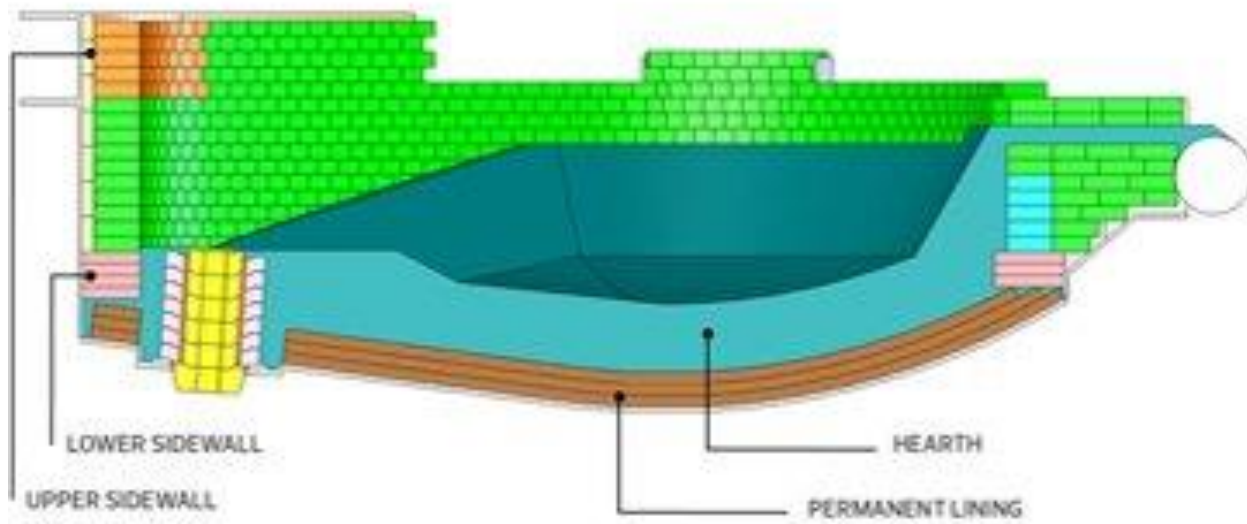


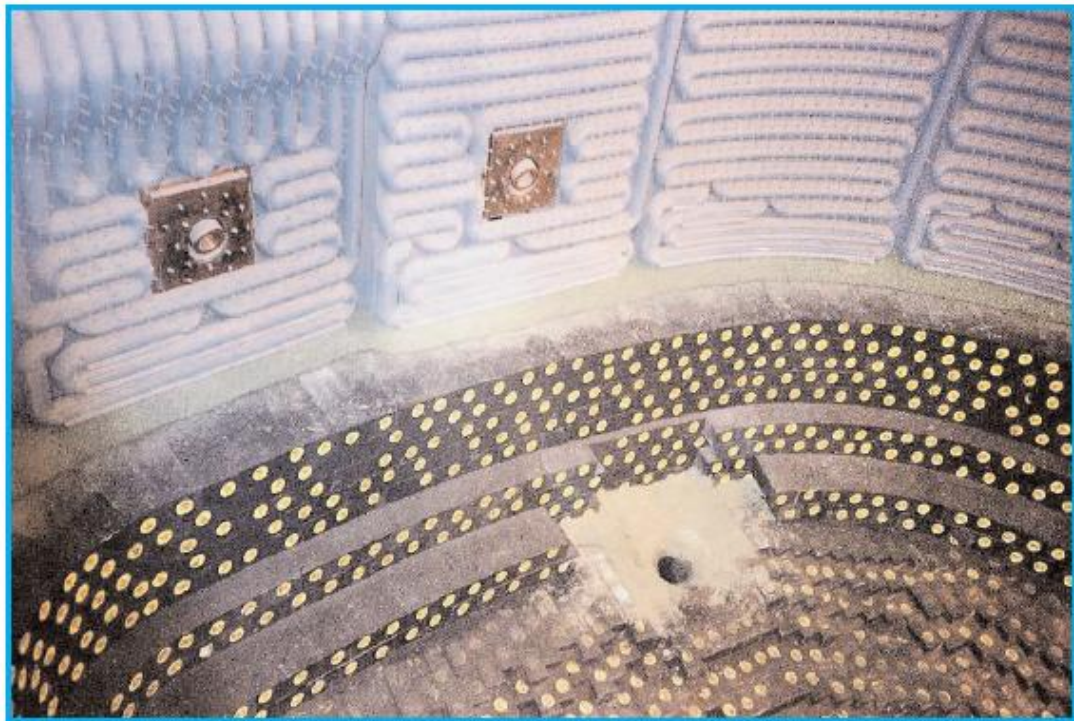
Brasil (~28 años)

3. PROCESO DEL ACERO

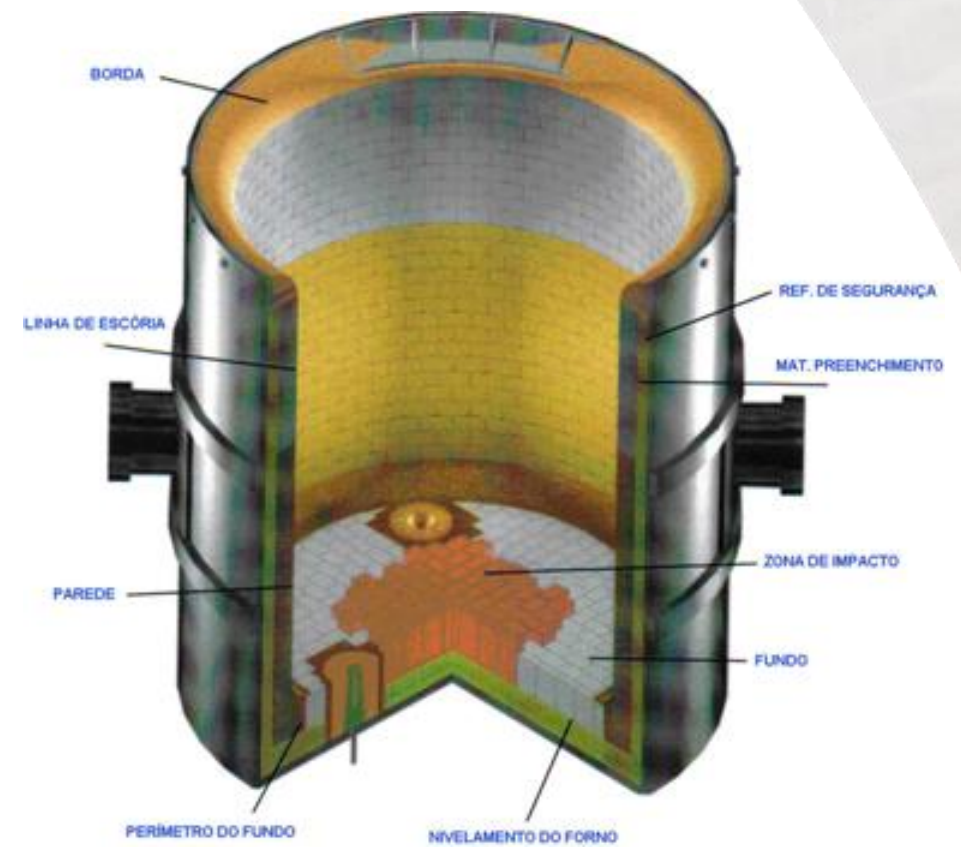
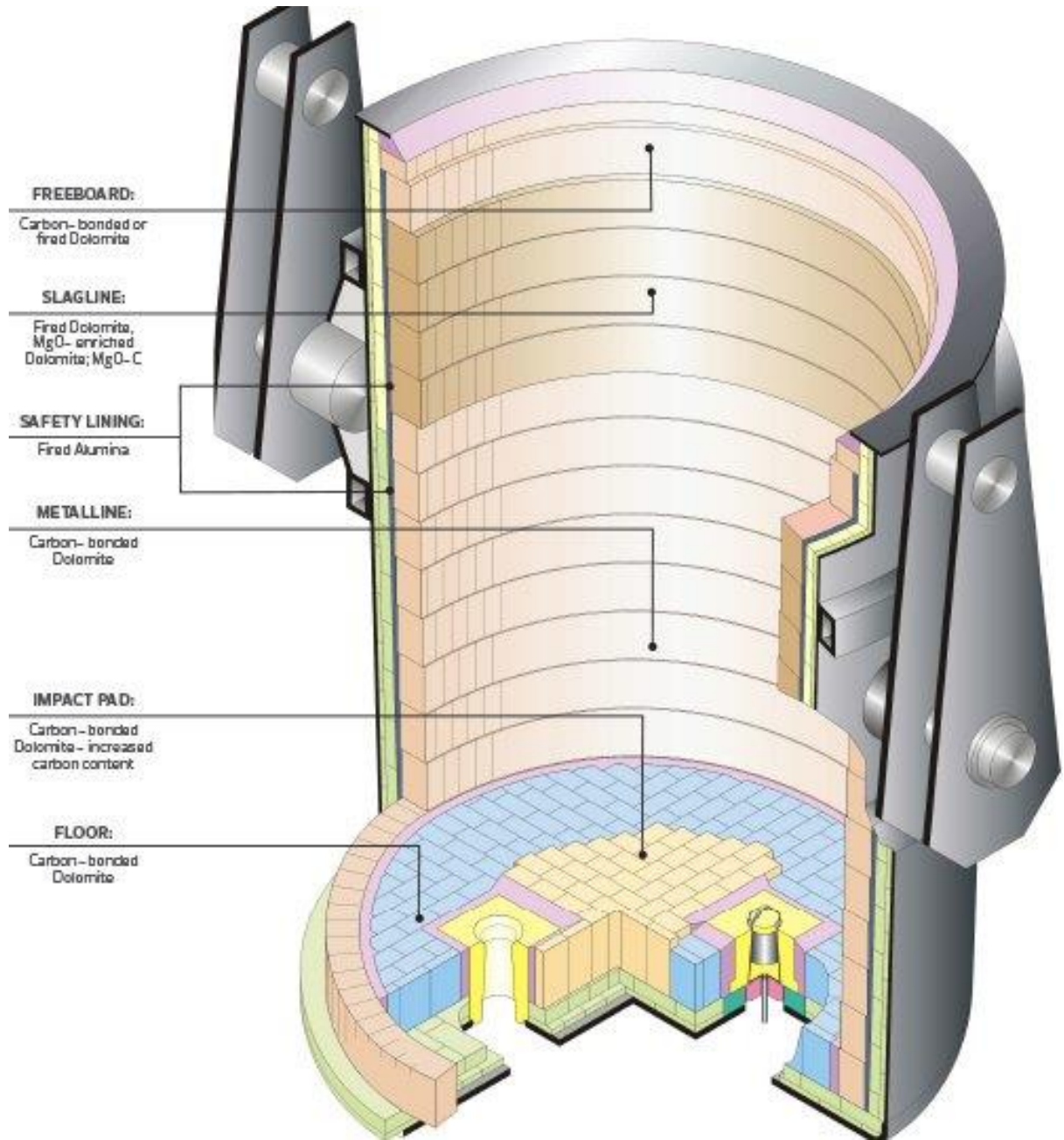


5. HORNO ELECTRICO DE ARCO

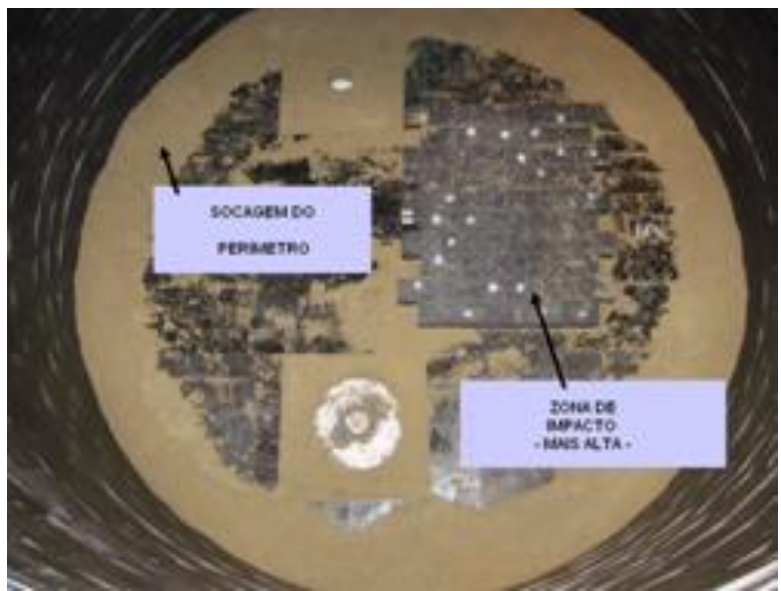




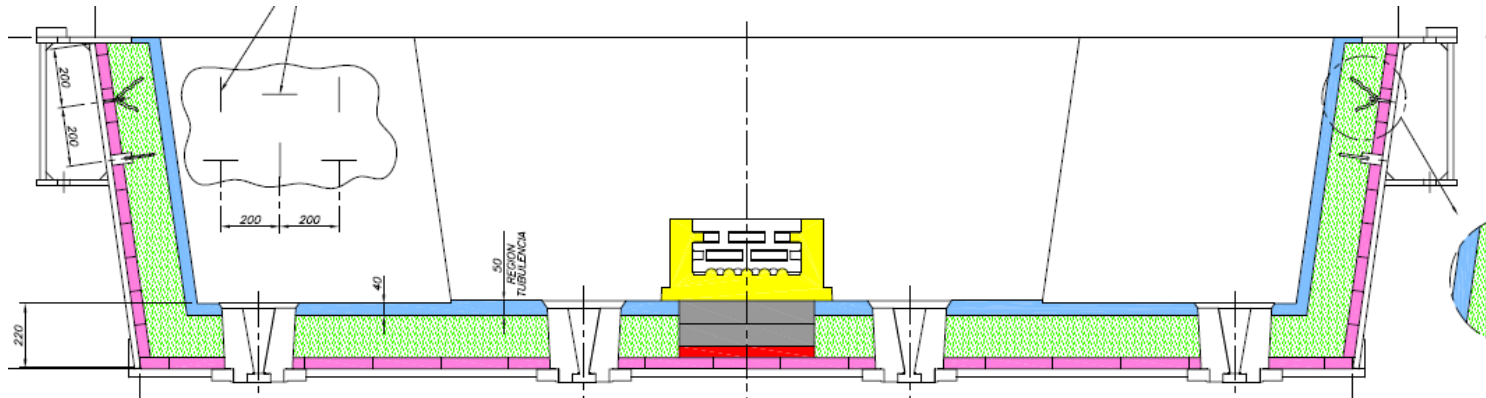
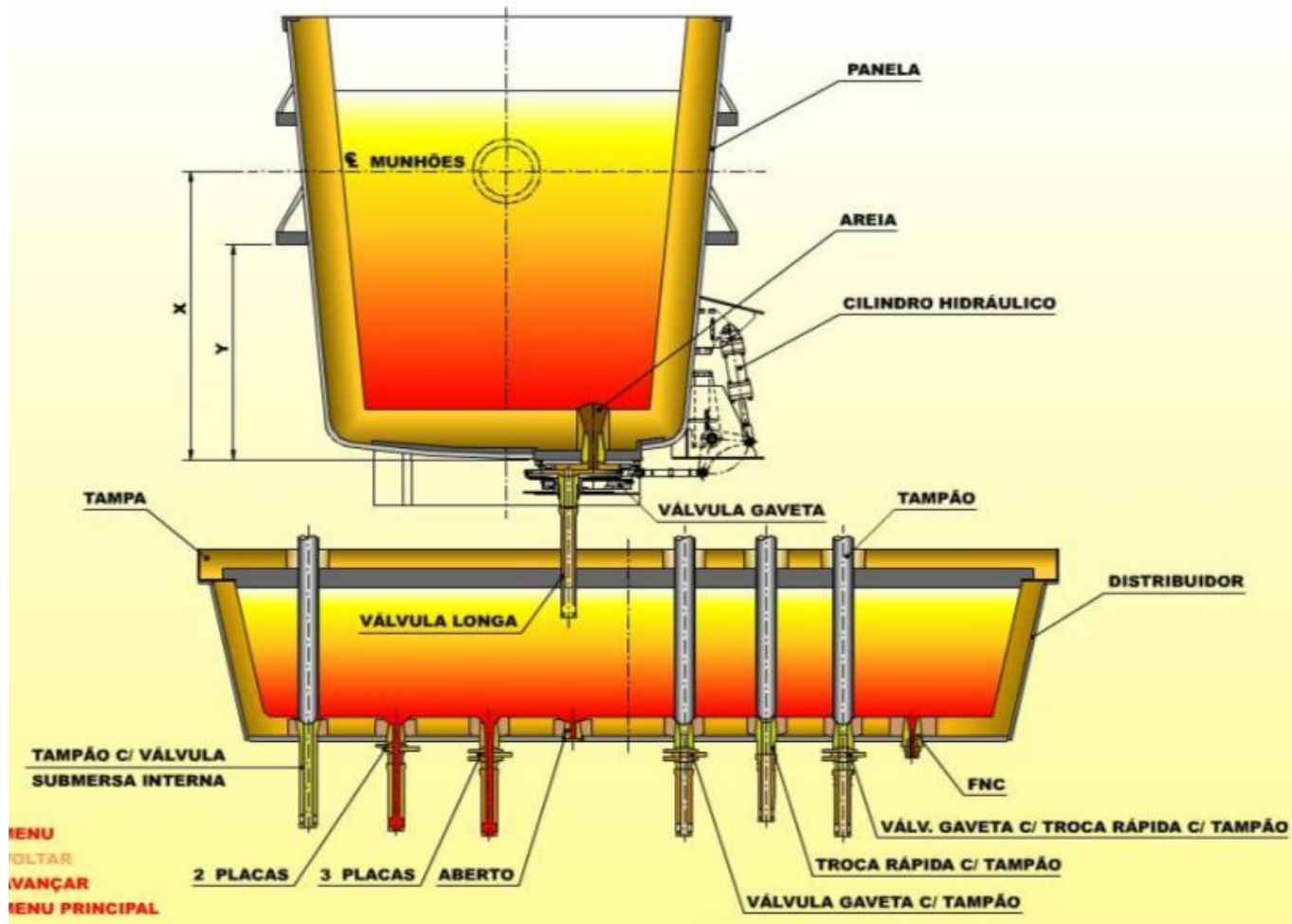
7. CUCHARA DE ACERIA



8. CUCHARA DE ACERIA



9. TUNDISH (DISTRIBUIDOR)

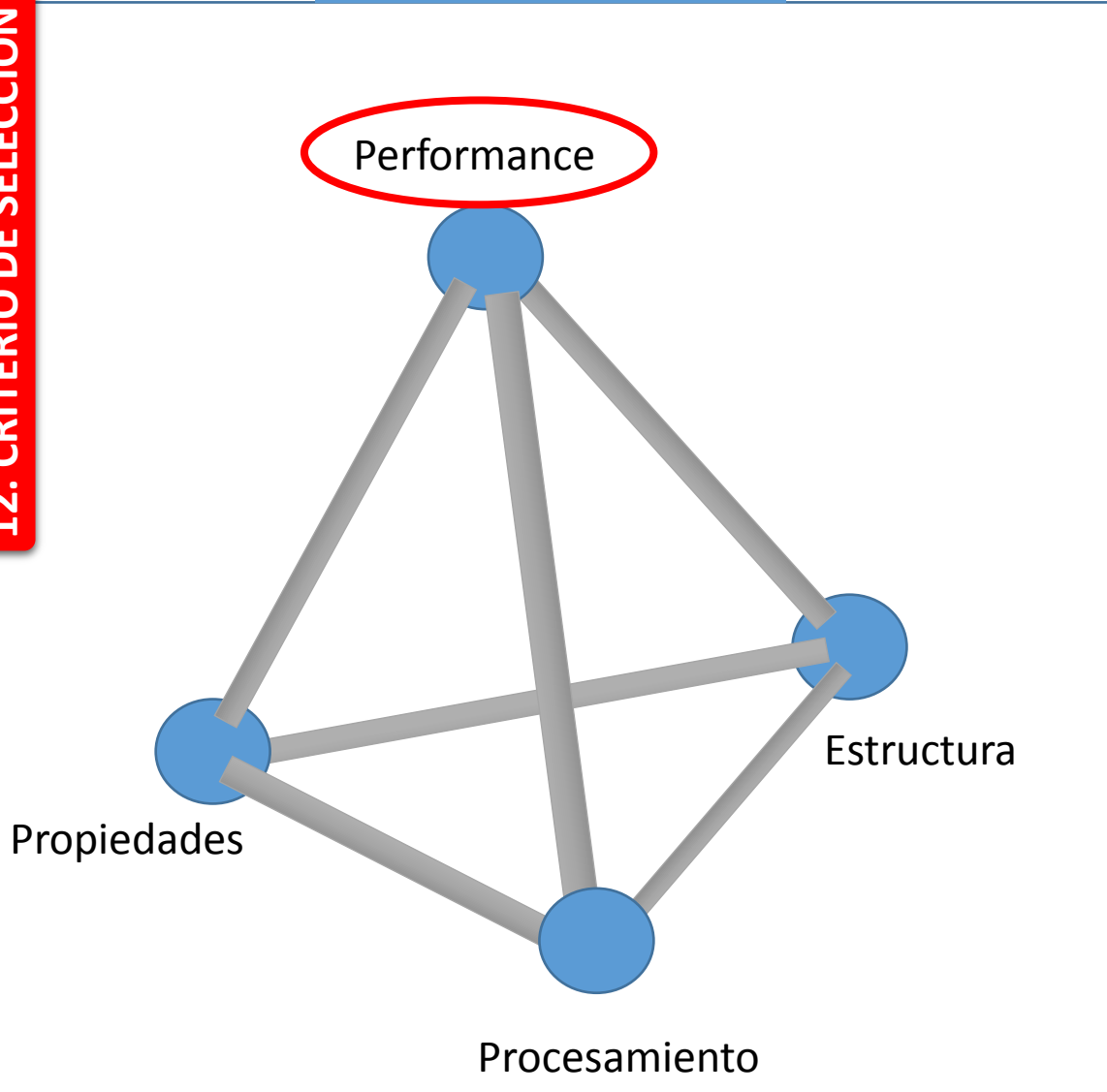


Material refractario o producto refractario son todos aquellos materiales naturales o manufacturados, no metálicos (no excluyendo aquellos que contengan algún componente metálico) que puedan soportar sin deformarse o fundir a elevadas temperaturas en condiciones especificas de uso.

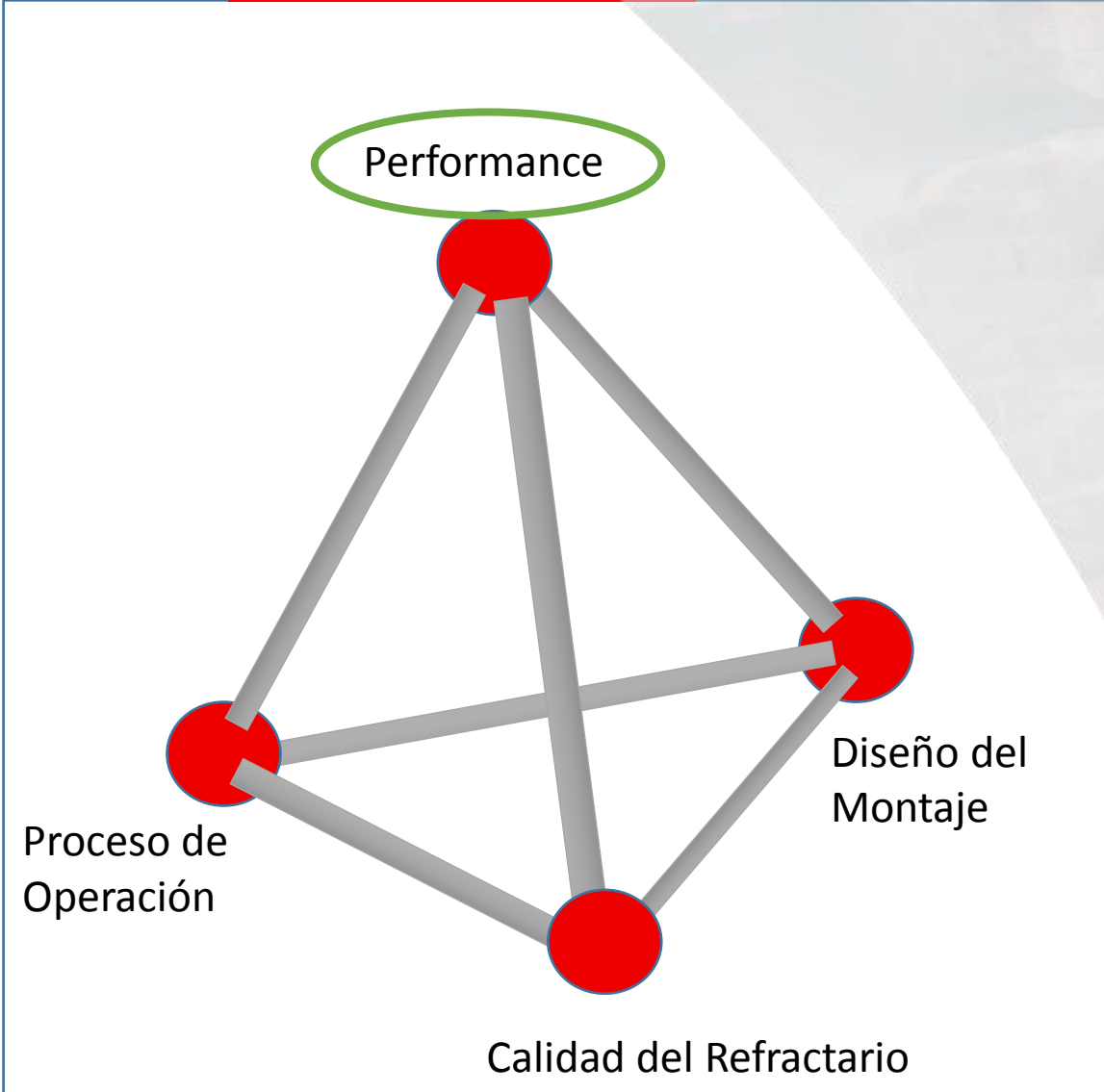


Propiedad	NORMA
Densidad y Porosidad	ASTM C-20
Resistencia a la compresión en frío (CCS)	ASTM C-133
Modulo de Rotura en frío	ASTM C-133
Resistencia a la Abrasión	ASTM C-583
Expansión Térmica	ASTM C-113
Resistencia al choque térmico	ASTM C-1171
Conductividad Térmica	ASTM C-210
Difusividad (Refractarios con %C)	ASTM C-714
Resistencia al ataque de escorias	ASTM C-874

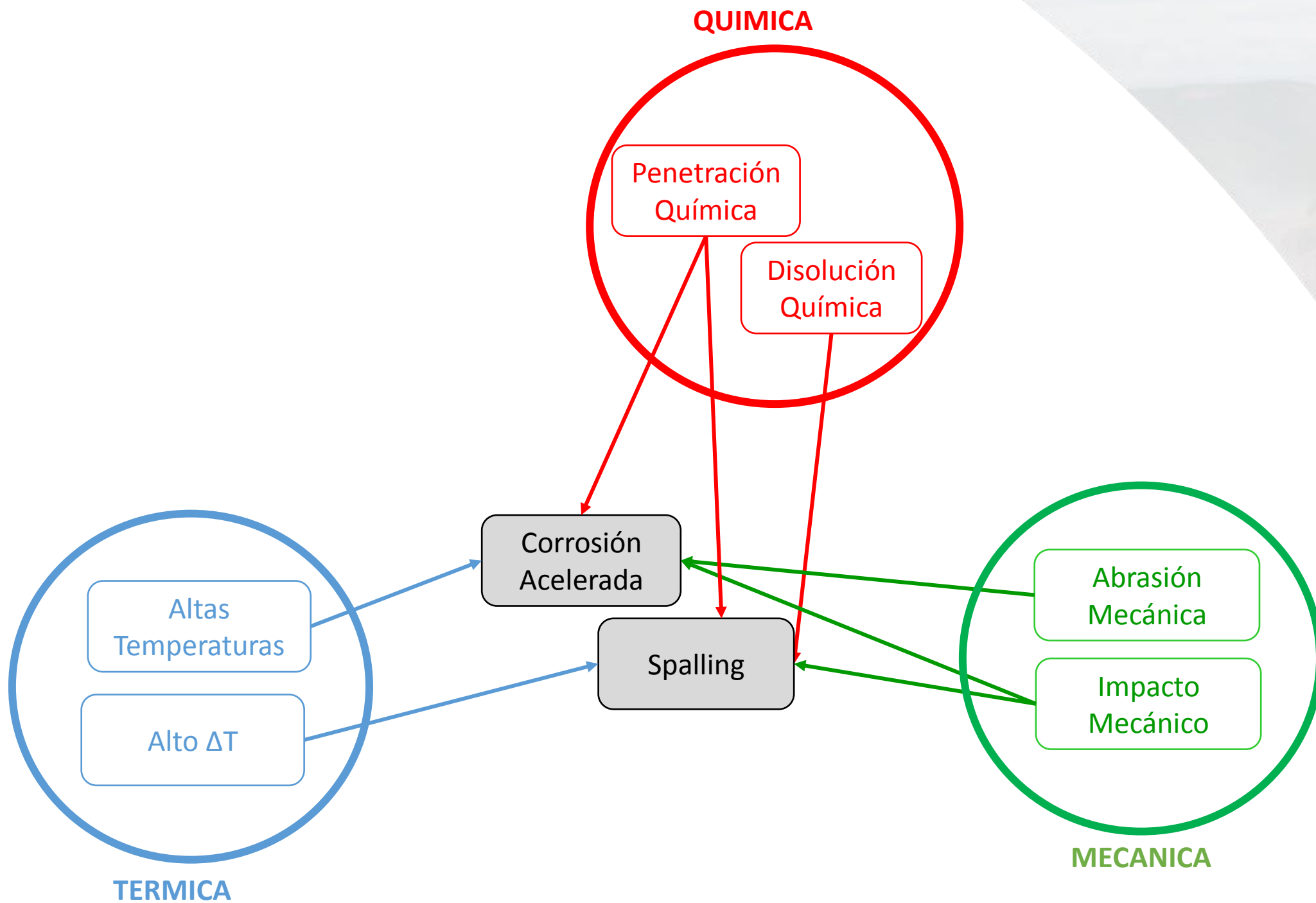
DISEÑO



EN SERVICIO



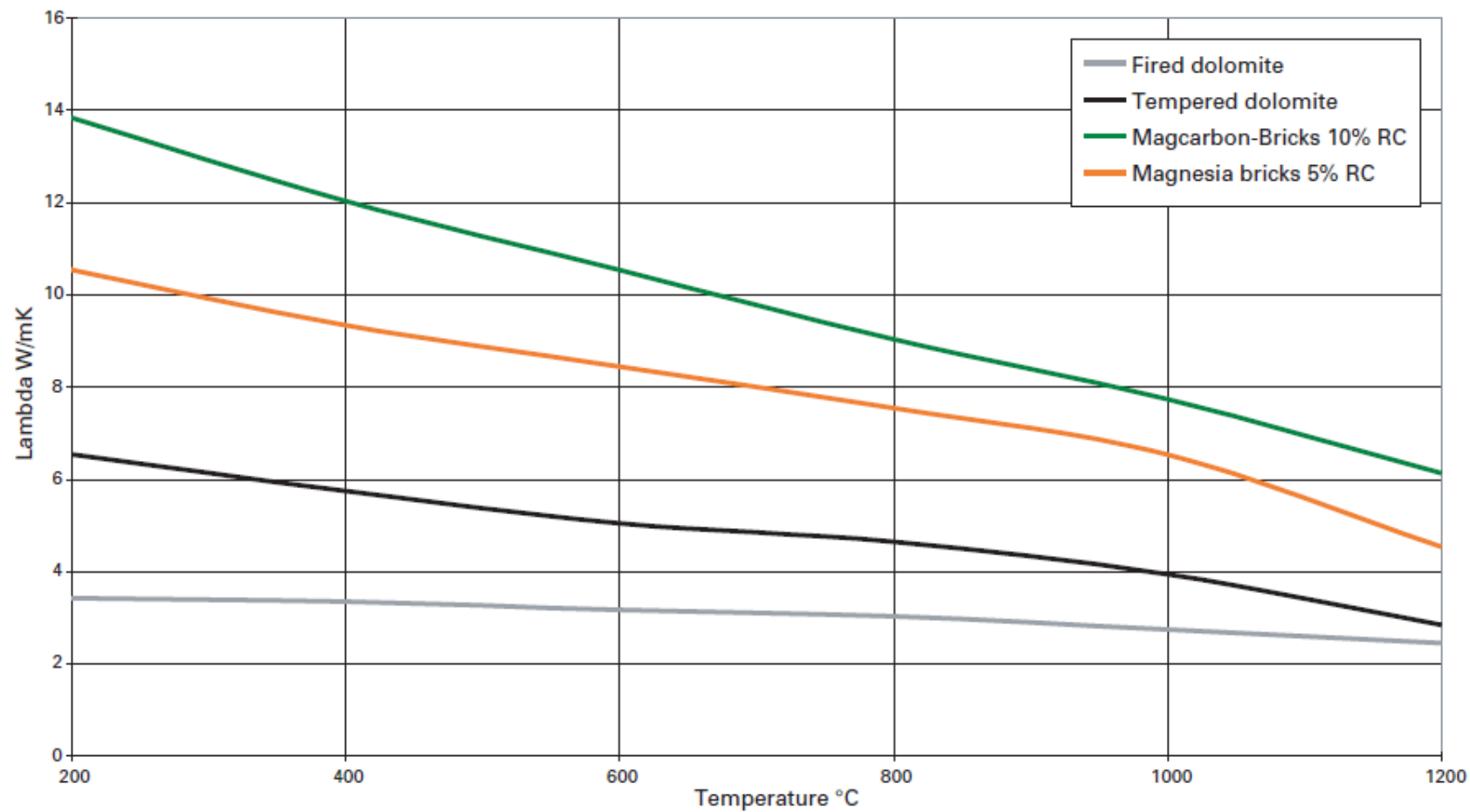
+La Seguridad Operacional debe estar Garantizada. Bajo ninguna circunstancia la calidad del refractario debe comprometerla.
 ++El Costo Especifico final del refractario es de vital importancia y un criterio importante en la selección del mejor refractario



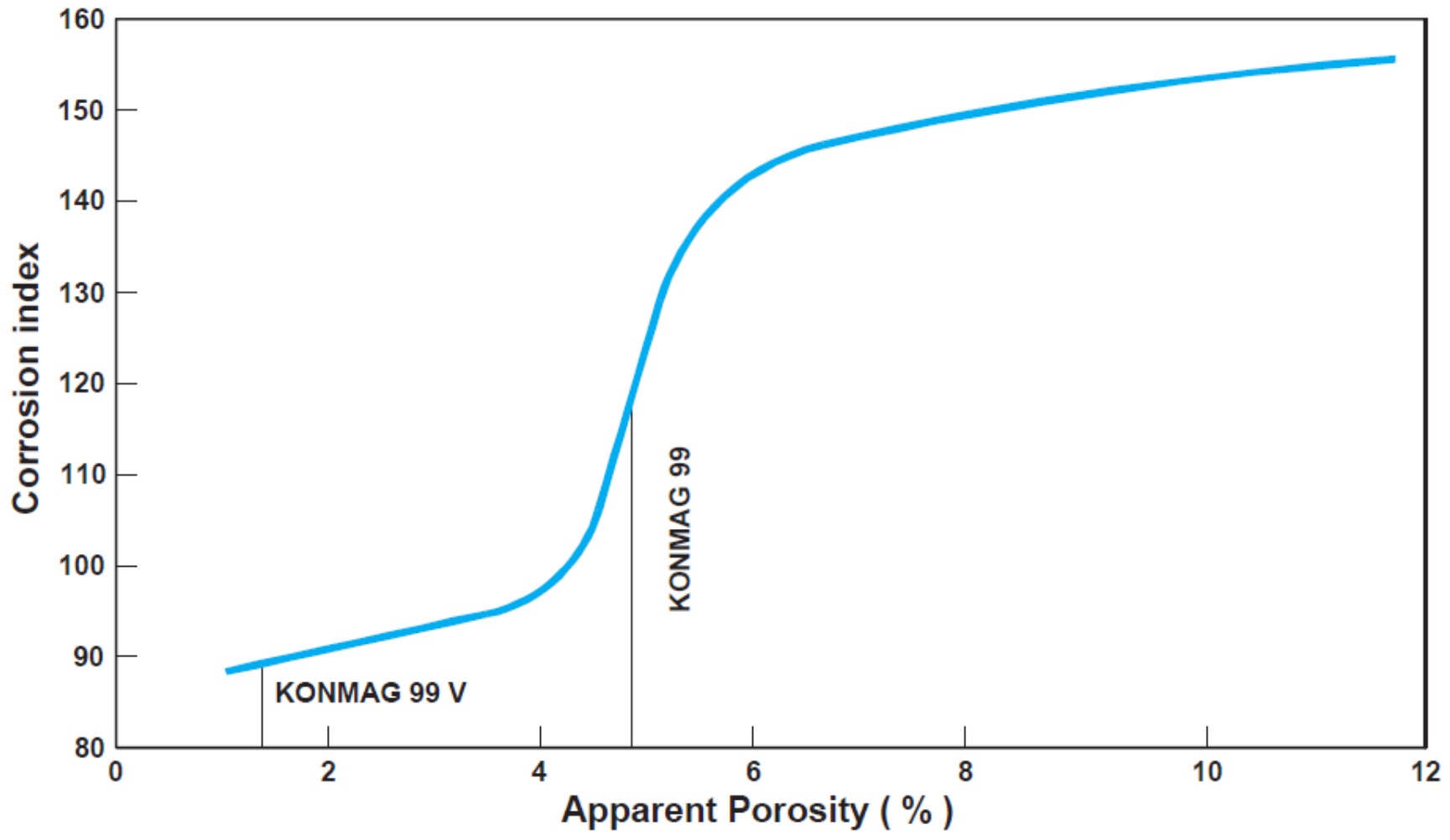
TERMICA

MECANICA

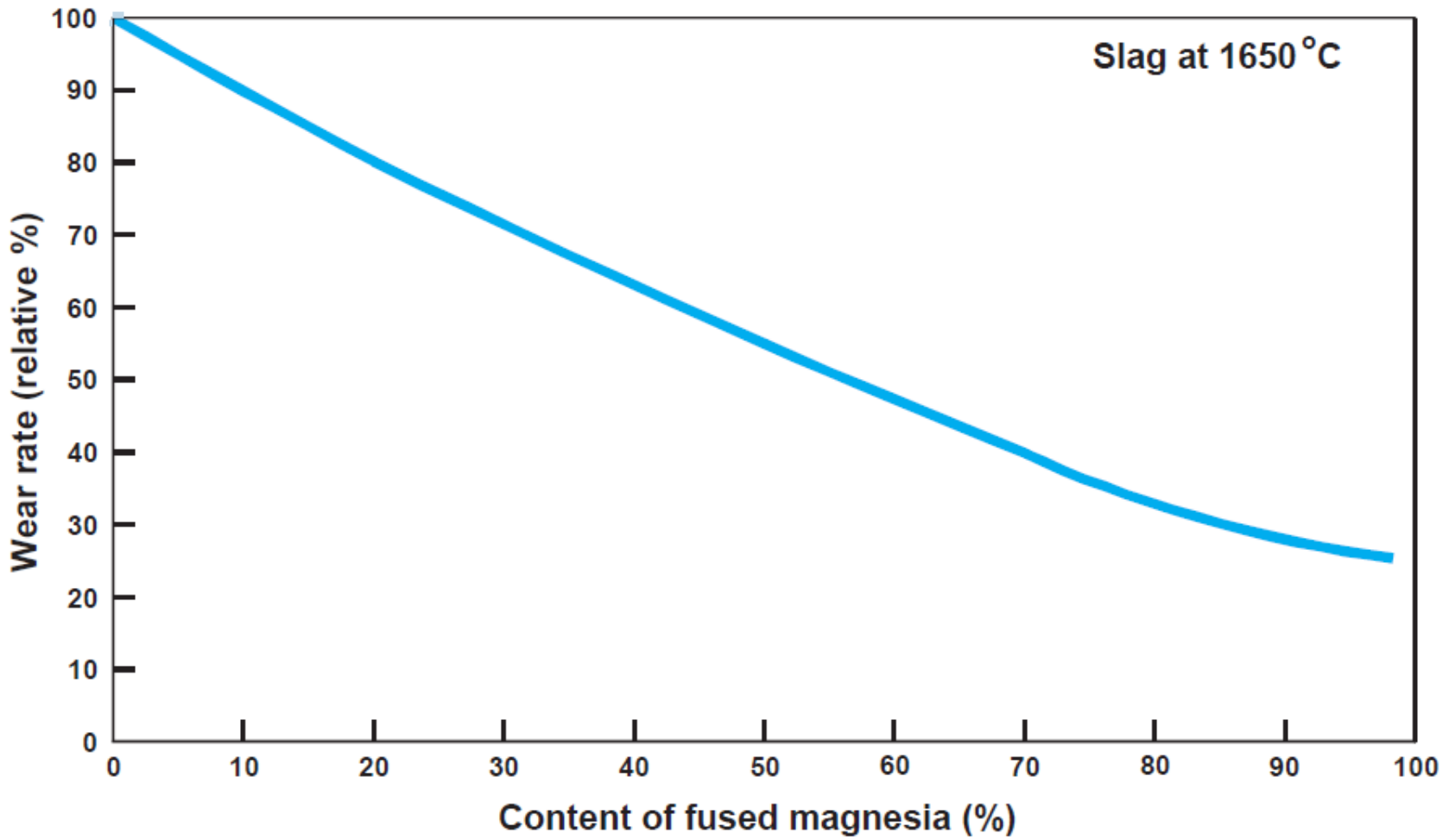
Thermal Conductivity of Basic Refractories

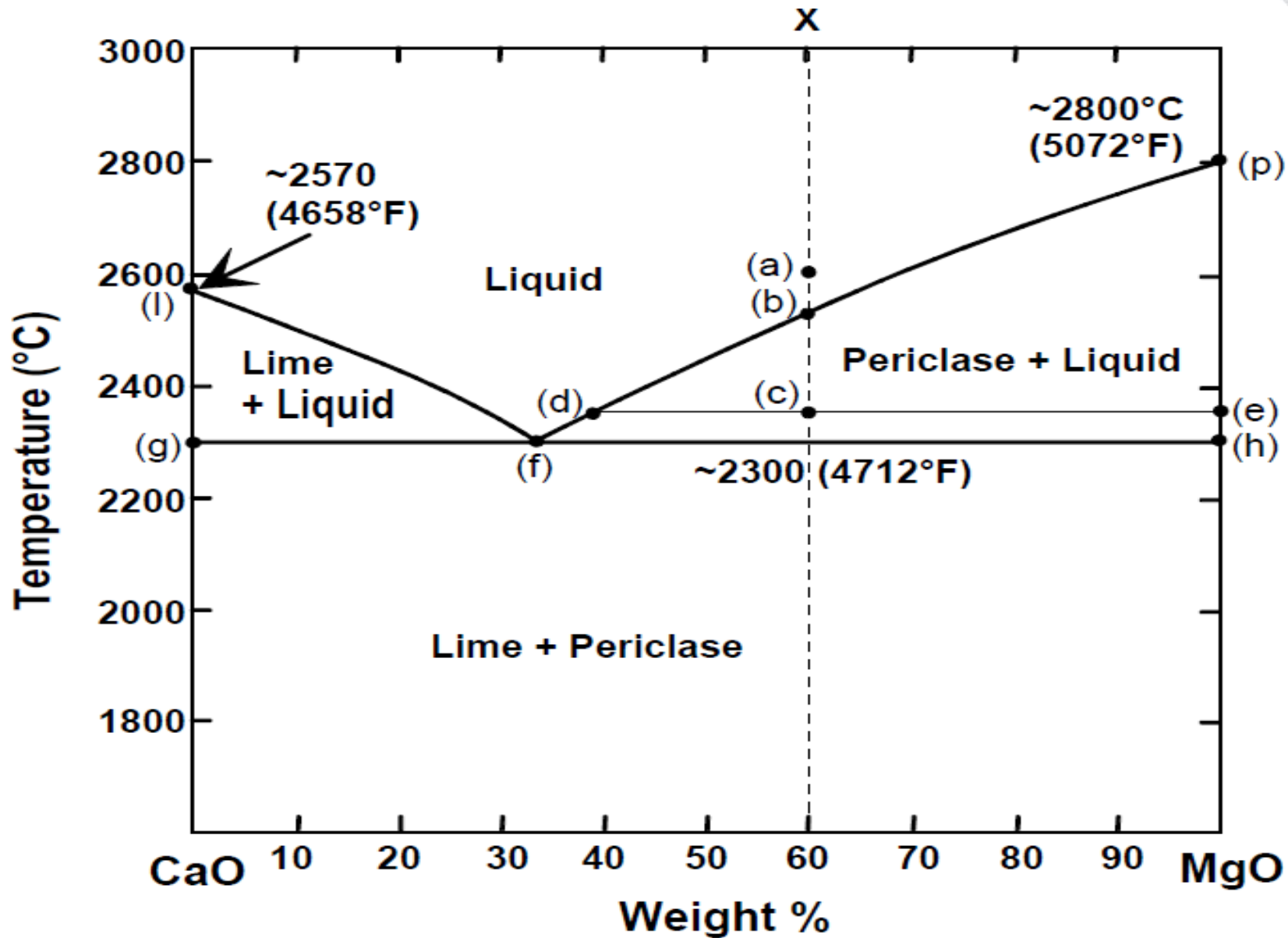


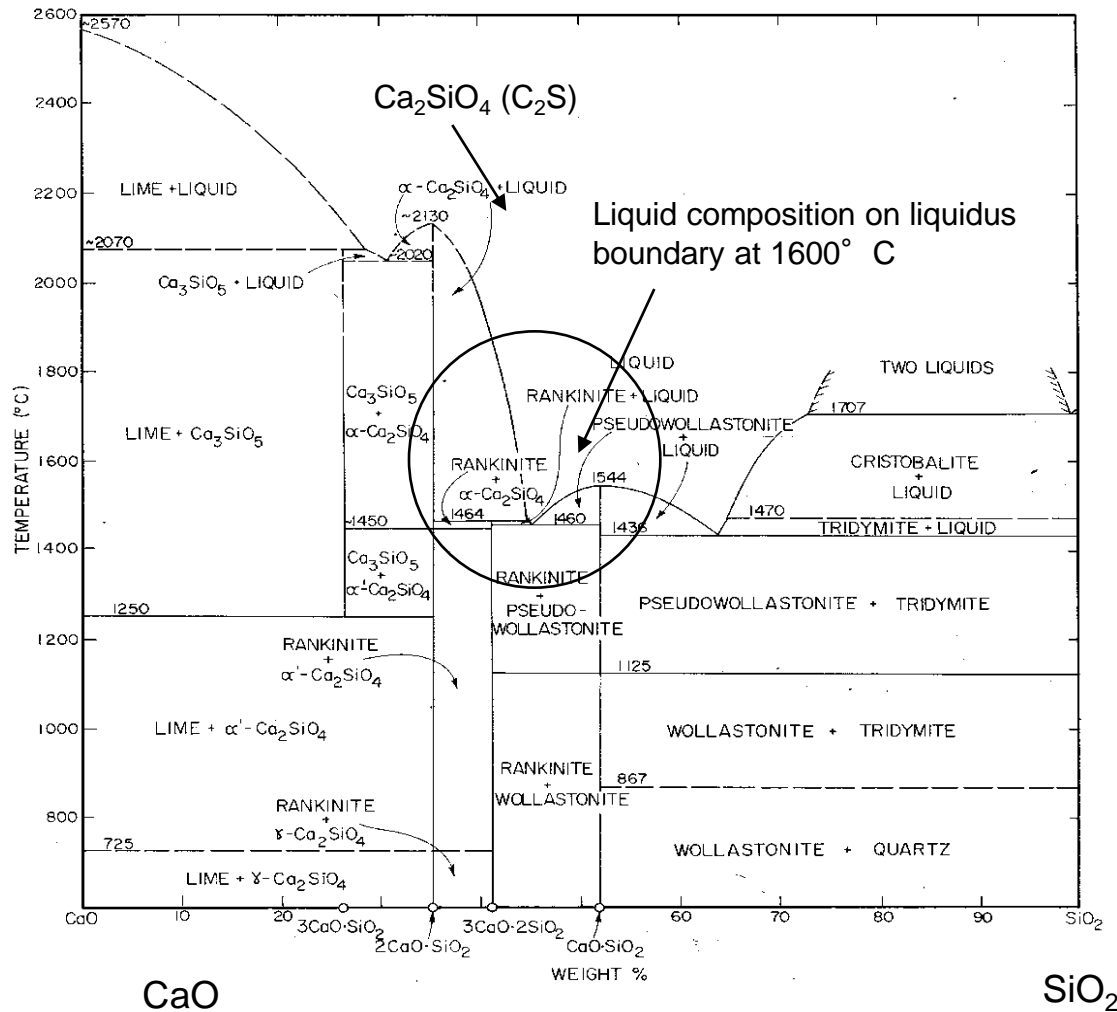
15. CORROSION VS POROSIDAD



16. DESGASTE VS CALIDAD MGO







Nota: Alto punto de fusión de Ca₂SiO₄ (C₂S) - 2130° C

A 1600° C

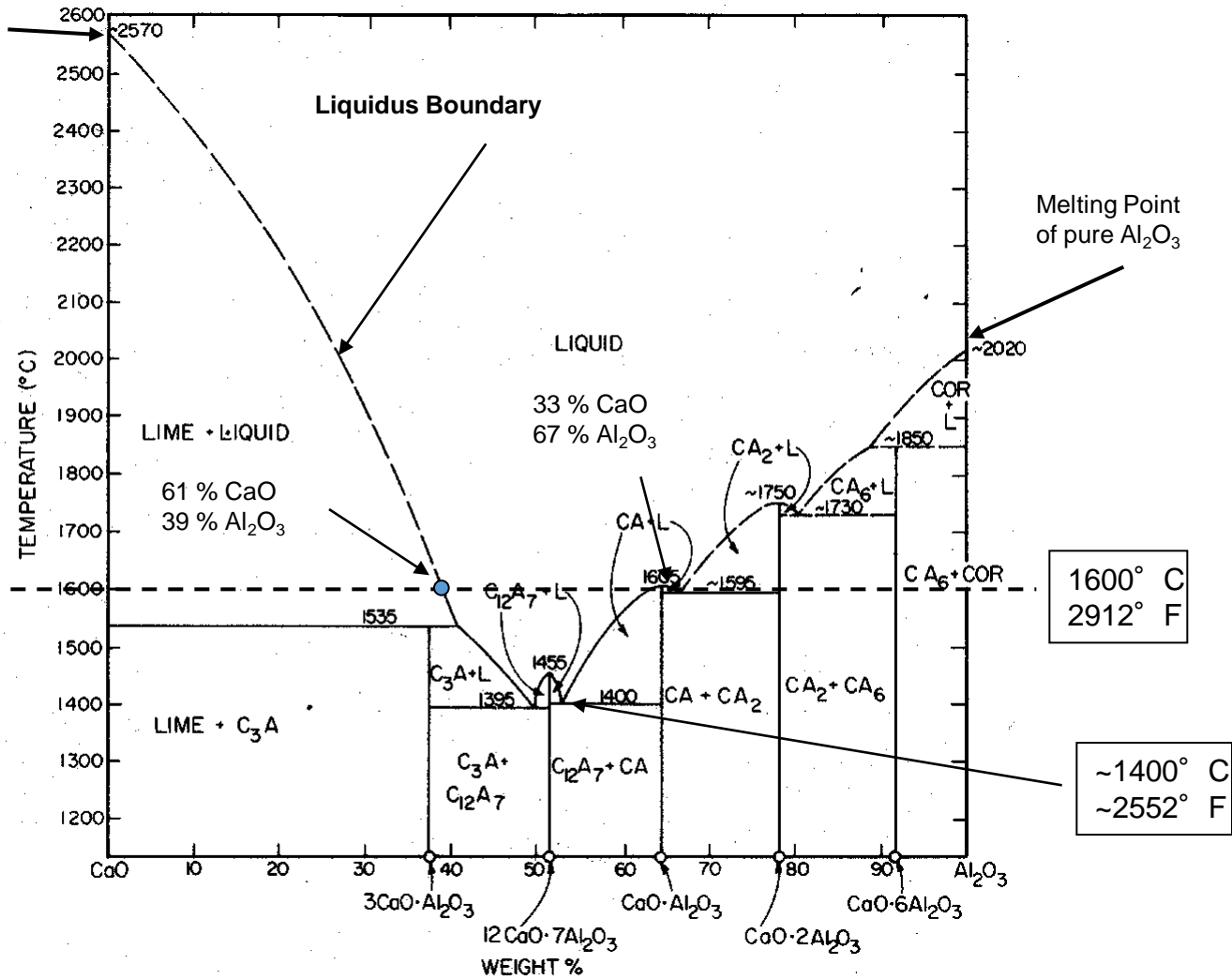
Composición de líquido sobre el contorno líquidus:

% CaO - 56

% SiO₂ - 44

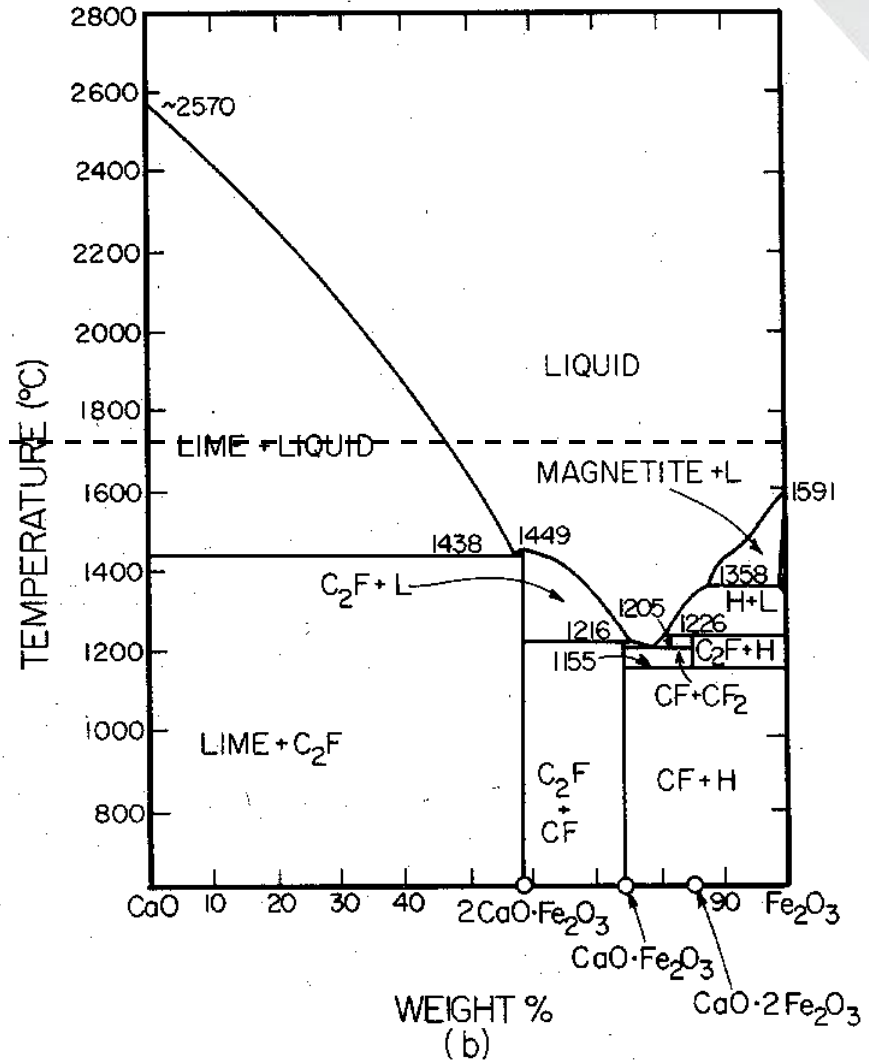
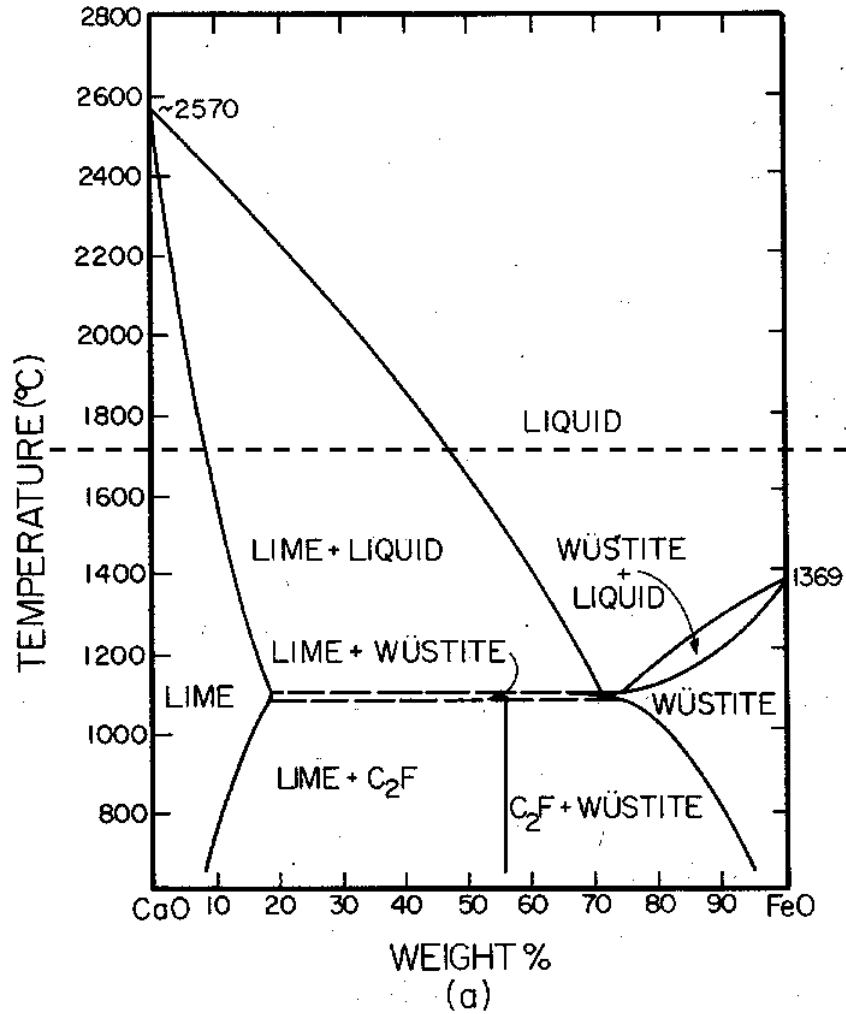
20. DIAGRAMA CaO·Al₂O₃

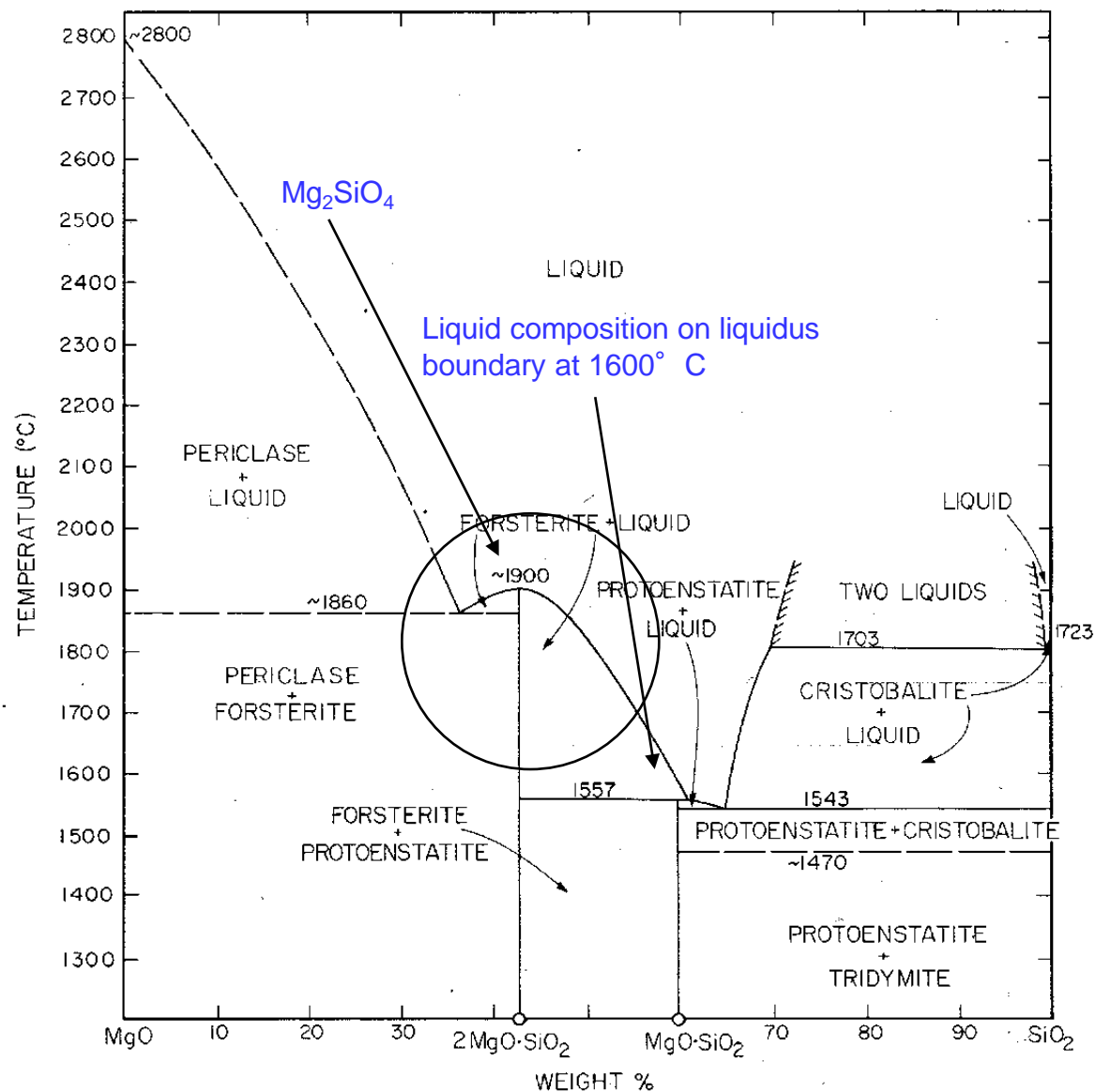
Melting Point of pure CaO



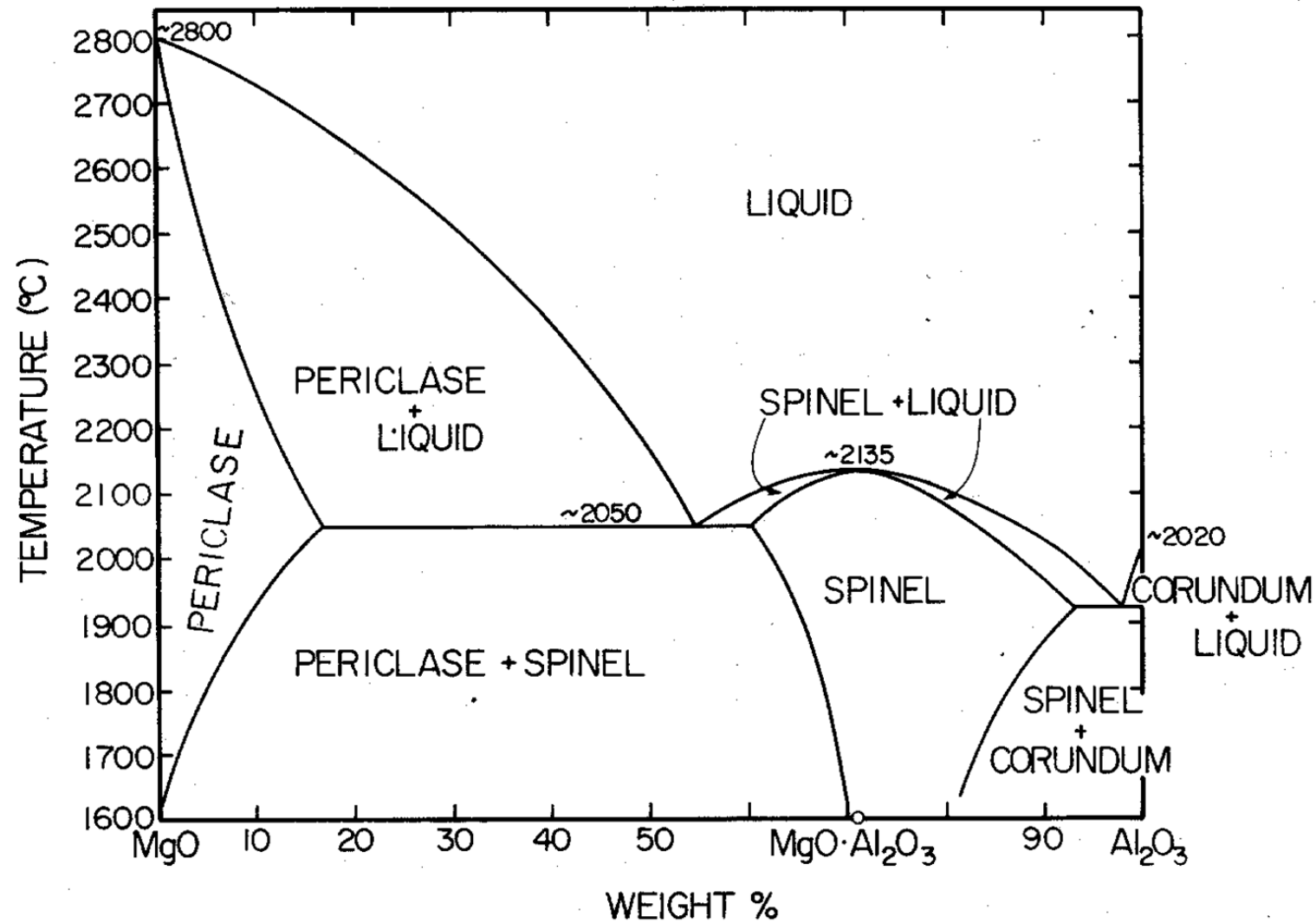
1600° C
2912° F

~1400° C
~2552° F

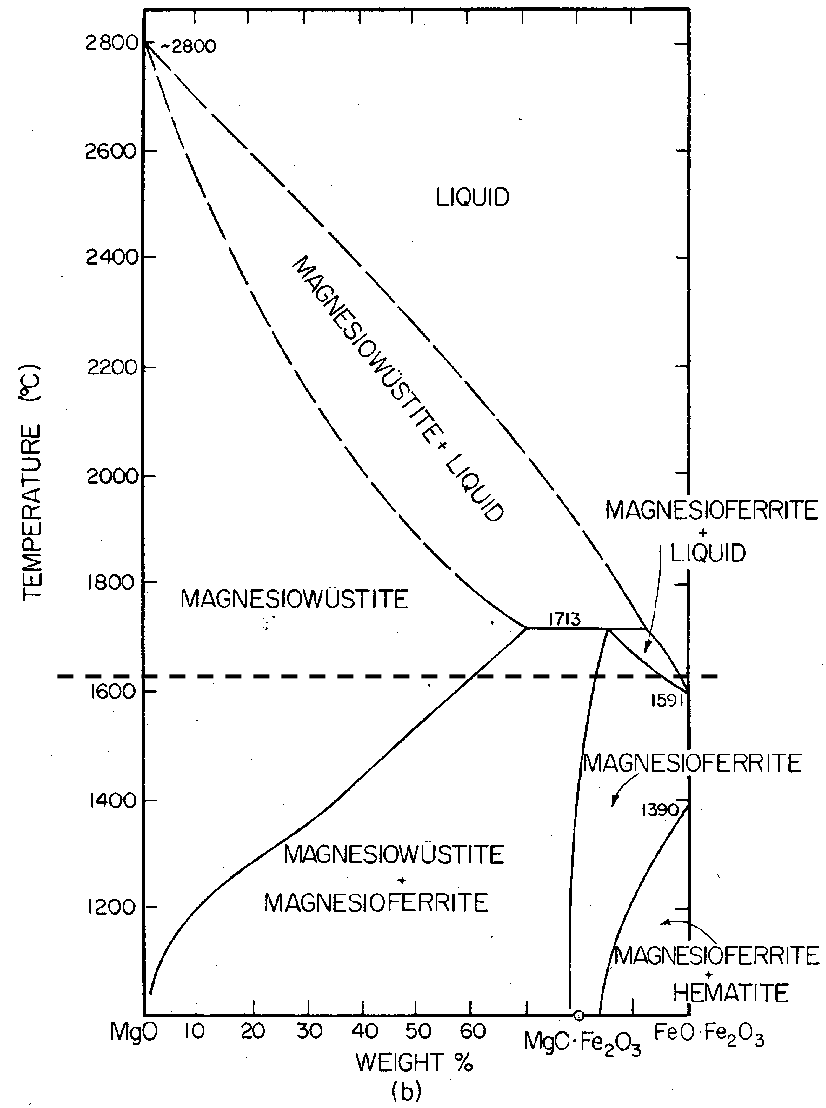
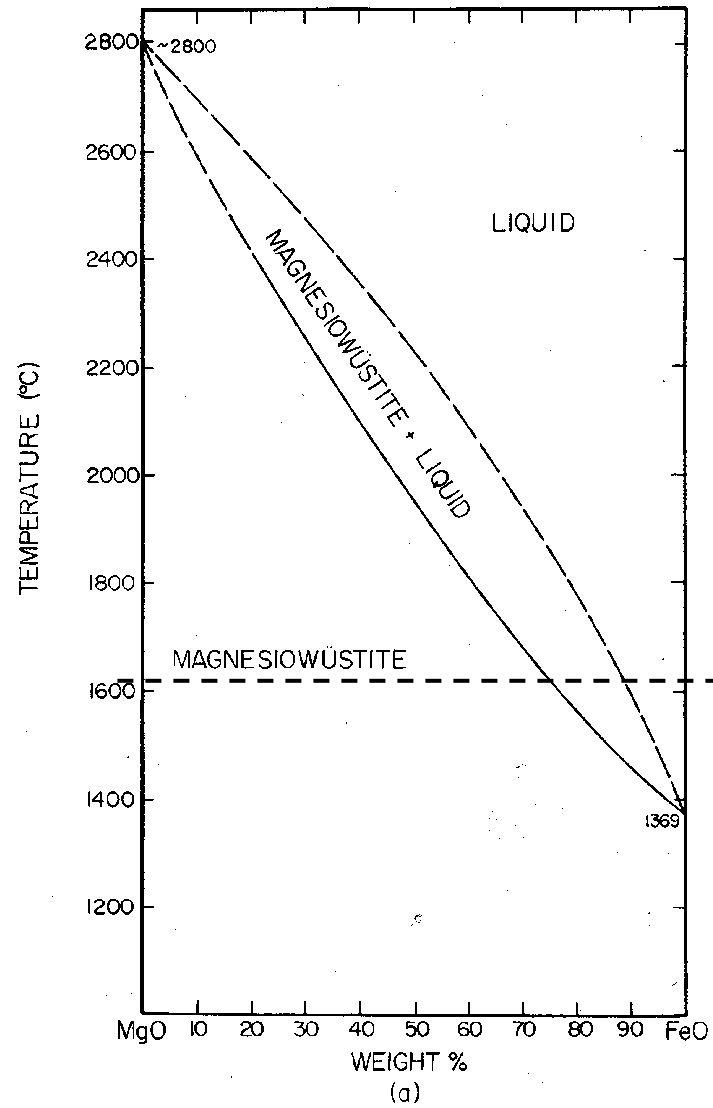


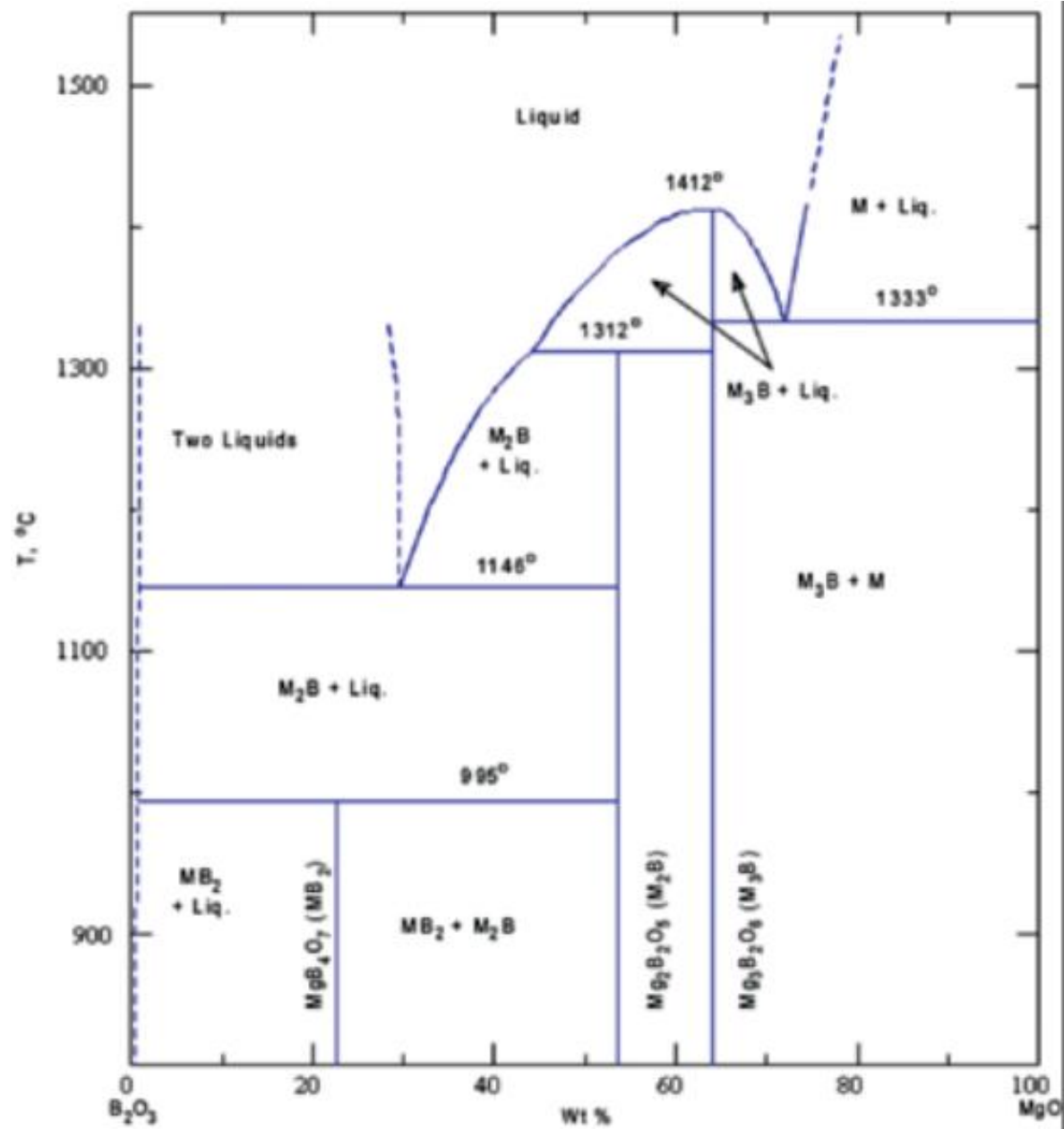


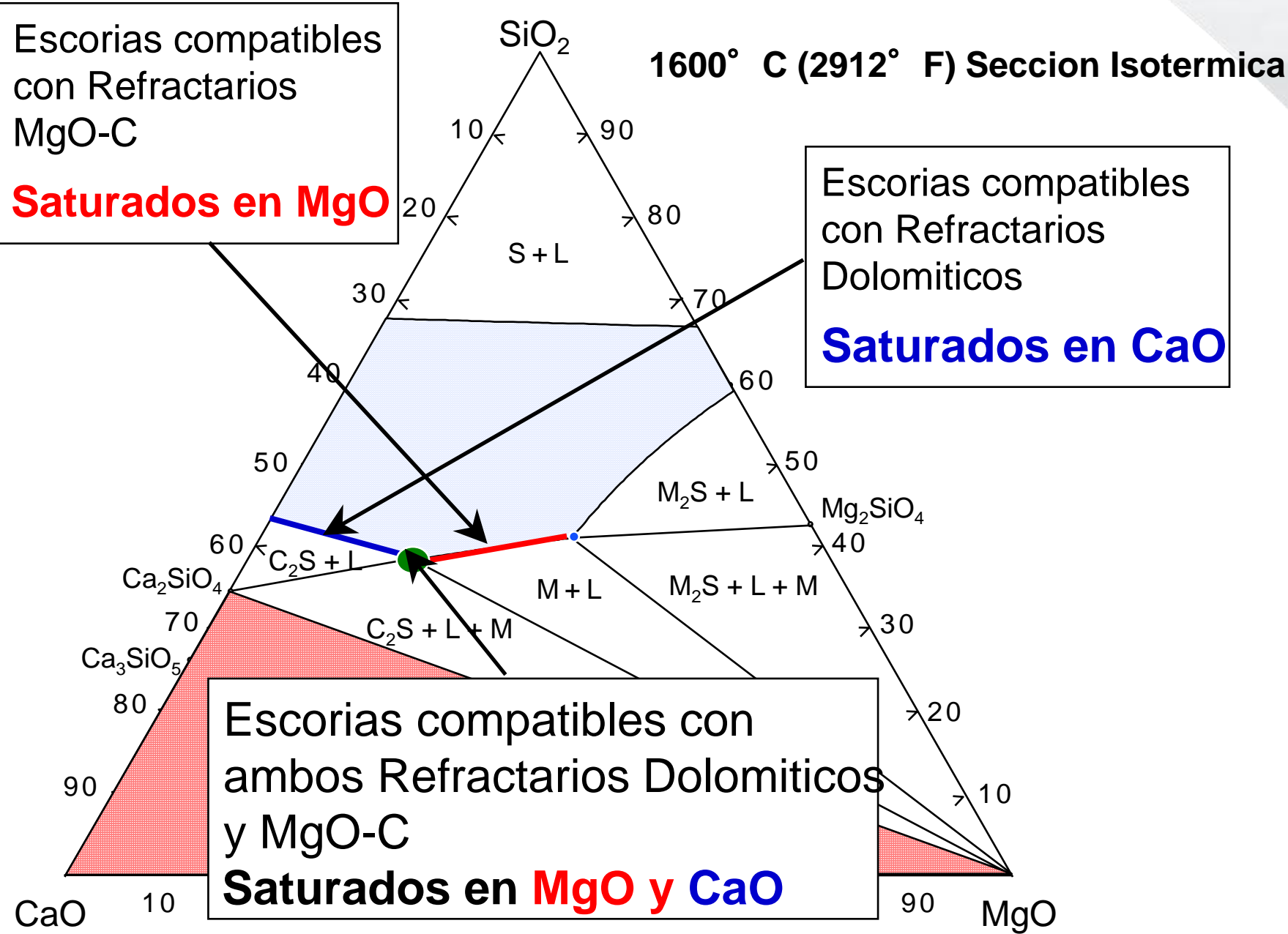
23. DIAGRAMA MgO·Al₂O₃

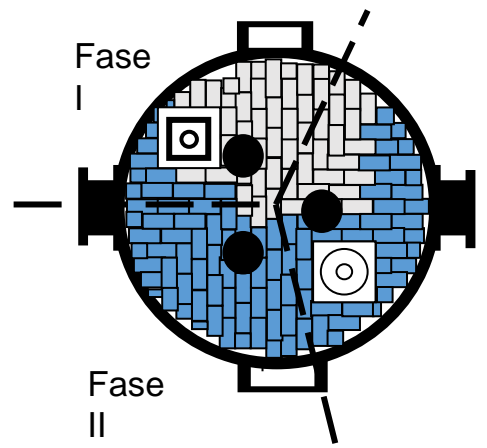


24. DIAGRAMA MgO.FeO/Fe2O3

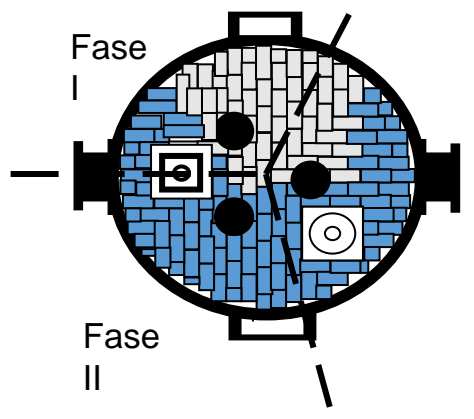
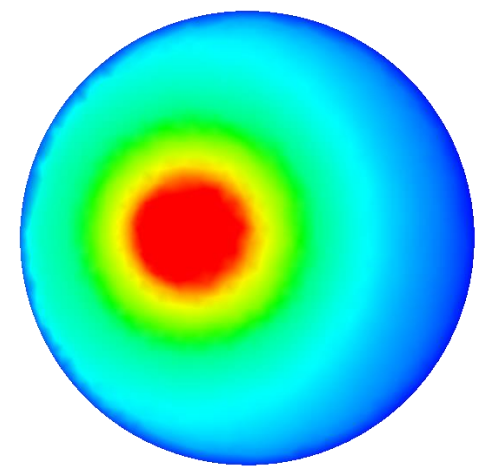




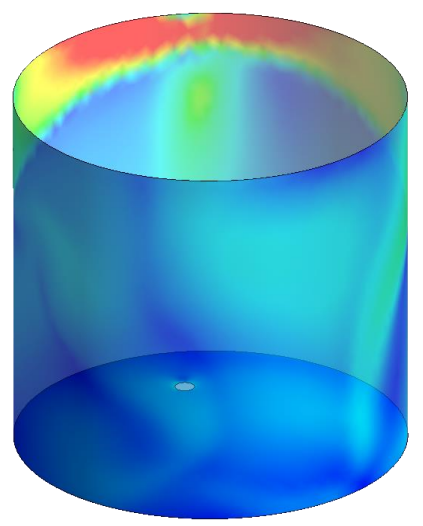




Posición Original



Nueva Posición



Fase III

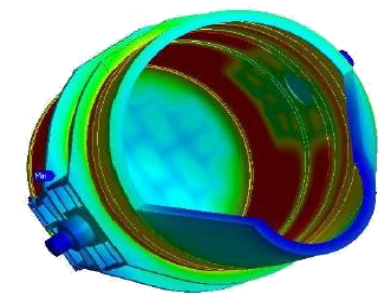
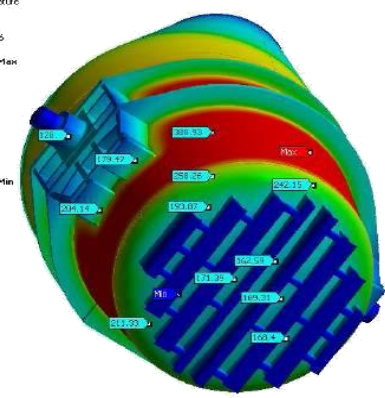
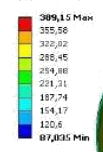


Perfil Térmico
Carga

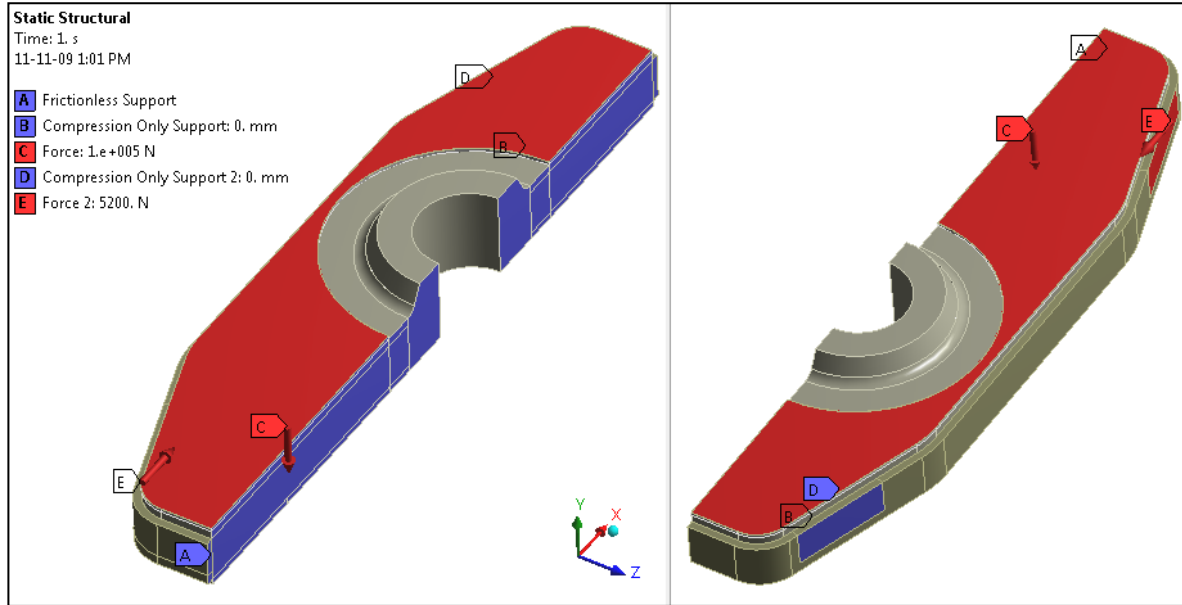
Dept. de Simulación Numérica & Mecanismos

Inicio de campaña

Type: Temperature
Unit: °C
Time: 1
7/5/2008 10:26

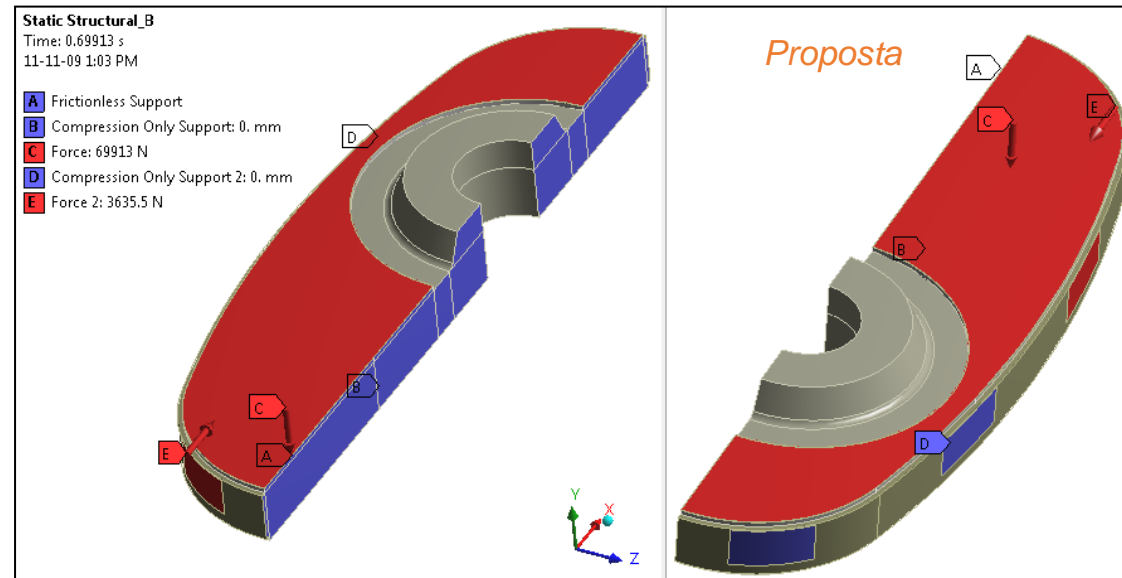


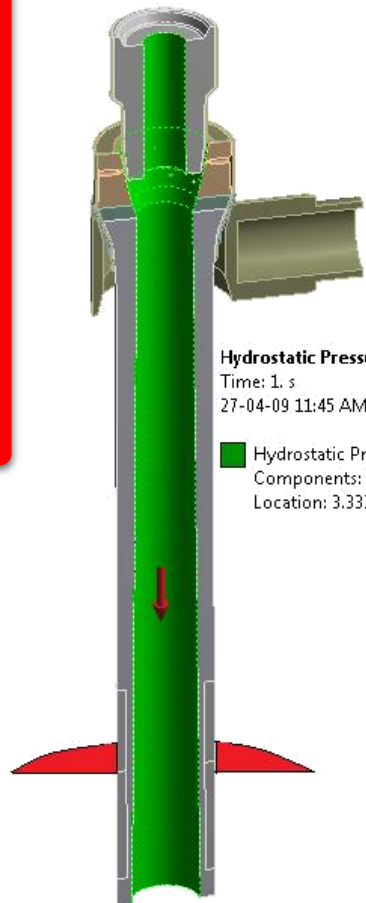
Limite de temperatura para o material do costado:
ASTM - A204GA → 426°C



+ End Time Transient Thermal Loads
→ input by the Thermal Profile simulation

- **Mechanical Properties of the materials:**
 1. Young's modulus,
 2. Density,
 3. Poison Ratio,
 4. Thermal Expansion,
 5. Tensile & Compressive Yield Strength,
 6. Tensile & Compressive Ultimate Strength.





Hydrostatic Pressure

Time: 1. s
27-04-09 11:45 AM

■ Hydrostatic Pressure: -9.8 m/s²
Components: 0., -9.8, 0. m/s²
Location: 3.3332e-002, -0.48568, 4.6419e-011 m



Aço líquido a 1580°C escoando contínuo em um tubo. (regime permanente)

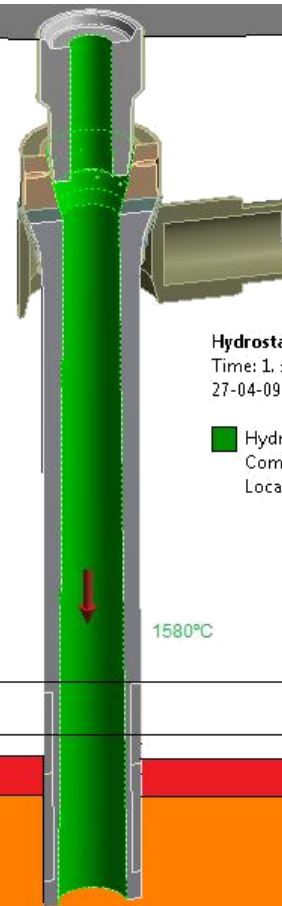
1 - Qual é a pressão na parede do tubo?

hipótese: Seria menor do que a pressão estática ($\rho \cdot g \cdot h$).

DADOS

Tubo
 $\phi = 9,50E-02$ $V = 1,0749E+00$ m/s
 $L = 1,40E+00$ $g = 9,81$ m/s²
 $A = 7,0882E-03$ $t_{\infty} = 1580$ °C
 $m = 191995,2$ kg/h $L/D = 1,47E+01$
 $Q = 0,007618857$
 $\rho = 7000$ Kg m⁻³

$v = 1,0749$ m/s



Panela de aço

Hydrostatic Pressure

Time: 1. s
27-04-09 11:45 AM

■ Hydrostatic Pressure: -9.8 m/s²
Components: 0., -9.8, 0. m/s²
Location: 3.3332e-002, -0.48568, 4.6419e-011 m

1580°C

1580°C

MUCHAS GRACIAS!!!

