Oxidation induction time (OIT) is defined as the time that takes oxidation of a sample to occur under oxygen at a given temperature. Applied to polymers, this measurement enables the evaluation of its oxidative stability. As an example, the process of aging of water pipes submitted to chlorinated water could be forecasted by performing OIT analysis. The OIT measurement is defined in the ISO11357-6 standard.

EXPERIMENT
Sample:
Fragment of Polyethylene (PE)
Experimental conditions:
• Atmosphere: Oxygen 20 ml/min, atmospheric pressure
• Sample mass: 15 mg in a 30μl aluminum crucible
Experimental procedure:
RT ➔ 220°C at 50°C/min under N₂
Isotherm at 220°C under O₂ until the end of oxidation

RESULTS AND CONCLUSION
During the heating ramp the melting of polyethylene is observed. When the isotherm step is reached, the N₂ gas is switched to O₂ and an exothermic event occurs after a period of time: this corresponds to the beginning of the polyethylene oxidation. The time between the introduction of oxygen and the oxidation event (measured at the peak onset) is the OIT, equal in this case to 95.6 min.

INSTRUMENT
SETLINE DSC / DSC+
-170 to 700°C
EASY TO USE WITH ROBUST SENSOR TECHNOLOGY
ensuring quality, consistent and reliable data
AVAILABLE WITH HIGH PRESSURE CRUCIBLES
up to 500 bar at 600°C
REASONABLY PRICED INSTRUMENT & SENSOR
for easy, cost effective replacement
LOWER COST OF OWNERSHIP
through simplified maintenance and a Replacement Parts Guarantee
TECHNICAL & APPLICATION SUPPORT
for fast expert help with any questions
CALISTO 2.0 EXCLUSIVE SOFTWARE
for intuitive and easy data handling