

# POLYESTER POWDER COATINGS FOR LOW TEMPERATURE CURING.

**COOL POWDER** is a polyester for applications in the industrial sector, with a reduced polymerization temperature: starting at 140°C.



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# ENVIRONMENTAL SENSITIVITY = REDUCTION OF ENERGY CONSUMED

In the last few years, the environmental sensitivity has been a crucial social issue. The studies carried out by the IPCC (Intergovernmental Panel on Climate Change) have clearly and unequivocally determined that the reduction of the carbon dioxide emissions (as provided for by the Kyoto treaty) is fundamental in order to ensure a livable world for the future generations. The manufacturing companies must therefore use new processes and/or new materials allowing a reduction in the energy consumed and consequently in the amount of CO<sub>2</sub> in the atmosphere – a sign of great responsibility and great respect for the environment.

**COOL POWDER** is a polyester powder coating series suitable for polymerization starting at 140°C for “General Industrial” applications, more and more required by the market.

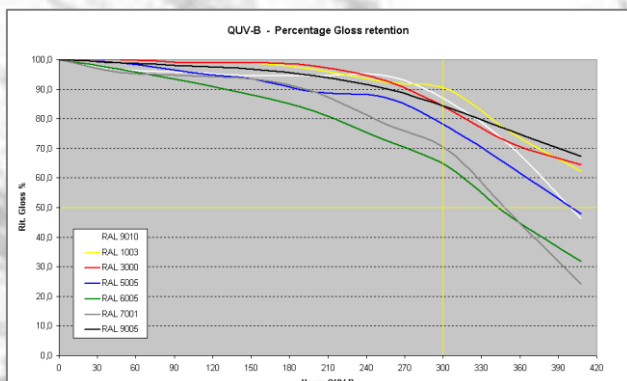
- **good mechanical properties**
- **excellent weather and UV radiation resistance**
- **low curing temperature: starting at 140°C instead of the traditional 180°C**

The low curing temperature offers three advantages:

1. **ECONOMICAL:** a lower curing temperature **reduces the energy consumption**, electricity or gas, which is necessary to bring our powder coatings to a complete hardening;
2. **ENVIRONMENTAL:** reducing electricity or gas consumption also means **reducing carbon dioxide's emissions** (carbon dioxide is the primarily responsible for the greenhouse effect by most scientists and, therefore, for the global warming of our planet);
3. **TECHNICAL:** easier **coating of thick objects**, with a high thermal mass, which can hardly reach 180°C in the oven.

The above-mentioned features do not negatively impact on the general characteristics of this powder coating line. Its **excellent outdoor performances** are summarized in the graph below (left), which shows the gloss retention of several RAL tones in the accelerated aging test.

Its **mechanical properties fully meet the traditional market standards** too. Some of the mechanical tests performed on these finishes are shown on figure below (right).



# COOL POWDER PRODUCTS ARE ALSO AVAILABLE IN THE SUPERDURABLE POLYESTER VERSION, TOO.

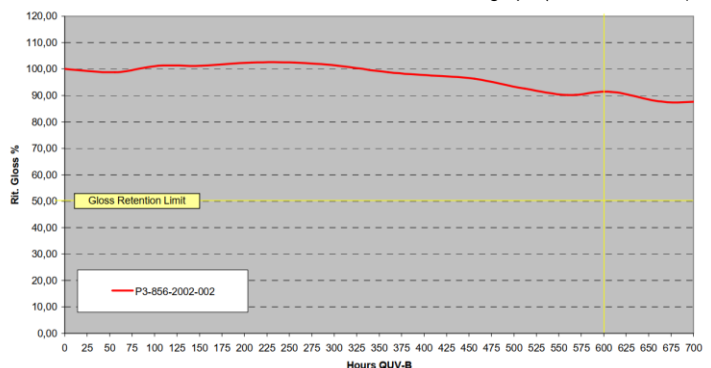
The traditional super durable polyester powder coatings based on HAA hardener ( $\beta$ -hydroxyalkylamide) are usually formulated for curing cycle 20 min at 180°C or higher. Other types of hardener (e.g., based on TGIC-free glycidylester) allow curing cycle at lower temperature because, unlike HAA, these ones could be catalyzed. However, glycidylester-based hardeners have not a safe toxicological profile (irritant) and, for this reason, are not easily accepted by the market. These hardeners also negatively affect the glass transition temperature of powder coating, making critical the storage stability and other chemical-physical characteristics of the coating.

THE ST Powder Coatings R&D DEPARTMENT HAS DEVELOPED A NEW SYSTEM BASED ON AN INNOVATIVE HARDENER **THAT ALLOWS THE CURING CYCLE AT 160°C** WITHOUT THE ABOVE-MENTIONED NEGATIVE ASPECTS OF GLYCIDYLESTER-BASED ONES. THIS NEW LINE, “**COOL SD POWDER**”, **HAS ALSO OUTSTANDING UV RESISTANCE.**

The general characteristics of this new powder coatings line are:

- surface appearance: smooth
- brightness: 70-90 gloss
- curing cycle: 160°C x 10 min (object's temperature)
- mechanical properties: some micro-cracks after impact test, which is typical of super durable coatings, without film detachment.

The UV radiation's resistance are shown in the next graph (colour RAL 2002):



## COOL POWDER, POWDER COATINGS ARE AVAILABLE IN THESE VERSIONS:

FINISHING	BRIGHTNESS	COLOUR
Smooth	Glossy, half-glossy, half-matt	 + coloured transparent.
Fine texture	Half-matt, matt	
Coarse texture	Glossy	

Available also in metallic version.

## CONTACT US.

For any questions relating to powder coatings, our team is at your side to help and advise you.



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