



Coated steel or aluminium piecwork must withstand a variety of environmental influences. GSB Quality Seals provide internationally accredited product assurance.

Editorial

Quality Assurance through Effective Cleaning Systems

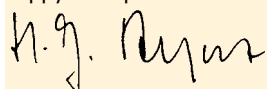


The quality of any coating depends on the pre-treatment, the coating material and the thorough execution of the coating process itself. The GSB Quality Label for Aluminium stands for a reliable and durable surface

for building contractors, architects and metal construction companies alike. Varying environmental conditions such as climatic changes and strengthening UV radiation pose ever increasing demands on the coating material. With the introduction of the high weather resistant Master and Premium quality categories, GSB International has already started to pioneer new standards.

To ensure optimum durability in the decorative quality standard and corrosion protection of high quality surfaces, facades must be maintained regularly in accordance with requirements demanded by their location. An Austrian GSB Premium coater has devised a comprehensive cleansing system to demonstrate the effect of regular maintenance, which we would like to introduce to you in the following pages.

The ongoing quality improvement in line with the latest technological developments and standards is one of the key objectives in the activity of GSB International. As such, GSB prides itself in being a reliable contact partner for contractors, architects and metal constructors. Our Head Office is always available and happy to help.



Hans-Jürgen Alfort
GSB International Chairman of the Board

GSB International – the first worldwide quality association for coated aluminium building components

For decades colour coated aluminium has been used increasingly in the design of facades, stipulating that the appearance of the coloured surfaces should remain unaffected for years despite a multitude of environmental factors such as sunlight, humidity, changing temperatures and chemical stress. This requires a high standard in terms of the pre-treatment process, the coating material as well as the coating technique.

Leading companies operating within the relevant industries identified early the need and importance of quality assurance to safeguard the standards, trust and reliability of up and coming coating technologies for all parties concerned such as architects, authorities, metal constructors and construction companies.

This was the background on which in 1977 GSB International was founded as the first quality association for coated aluminium building components worldwide with the ultimate aim of uniting quality oriented coaters, suppliers of lacquers and pre-treatment chemicals and other related operators.

GSB International has since then introduced various quality levels for both coaters and coating materials. By the same token the GSB Quality Regulations have been extended to include standards of quality assurance for the industrial coating of galvanized steel piecwork used in the construction industry.

Thus GSB International secures and will continue to secure a solid and reliable basis of trust in the quality of coated piecwork and products.



Cleaning of Aluminium Surfaces

Examination by a GSB-Premium Coater

Boris Grau
Head of Quality and Development
Piesslinger GmbH, Molln/Austria



General

Aluminium surfaces are coated organically to enhance their decorative appearance and resistance to corrosion, whereby more or less weather proof powders of various approved systems in accordance with the GSB Quality Regulations AL 631 are applied to pre-treated surfaces.

The quality of these powders is classified by their ability to retain both colour and gloss which is assessed by set measurements dependent on the system and shade used and after Florida weathering of 1, 3 and 5 years respectively (relating to Standard – Master – Premium- Systems) with 50% gloss retention as a minimum requirement.

However, over time even components that have been coated to the highest quality standard are subject to pollution which can affect their decorative appearance. In reality over several years a degree of inevitable dulling occurs which is caused by the erosion in the adhesive qualities of the coating. If surfaces are to be maintained appropriately, they should be cleaned following set guidelines at least twice a year and more frequently with increasing levels of environmental stress.

Improving Resilience to the Environment

Facades, doors, window frames etc must be cleaned on a regular basis to prevent premature dulling. The frequency of cleaning cannot be determined in general terms as the degree of pollution depends on both the location as well as the aesthetic demands on the appearance of the decorative components. If facades are exposed to higher levels of humidity and are located in the more aggressive environment of inner cities and industrial areas, the frequency of maintenance is naturally more demanding as increased fossil fuel waste output will produce higher levels of carbon dioxide which with insufficient maintenance and in conjunction with accumulated dust and air humidity can cause considerable damage.

The maintenance of powder coated building components should be carried out under consideration of various factors.

Initial Maintenance

Initial maintenance is carried out on completion of the building project to remove accumulated building dust and environmental pollutants. If required,

initial maintenance may involve mildly abrasive cleaning systems.

Basic Maintenance

Basic maintenance denotes a mildly abrasive cleaning process which is applied to facades that have not been maintained for a number of years.

Interval Maintenance

Interval maintenance is the regular follow up after the initial or basic maintenance process. Suitable intervals should be set in accordance with the levels of pollution and/or the decorative demands on the appearance of the façade. Interval maintenance should be cost effective and non abrasive, unless absolutely necessary.

Cleaning Materials

Neutral cleansers should be used for the maintenance of powder coated Aluminium profiles and sheets. Cleaning agents must have a pH value between 5 and 8 and should be tested in accordance with GRM: RAL-GZ 632 (Gütegemeinschaft für die Reinigung von Metallfassaden – Quality Association for the Maintenance of Metal Facades). They must be free from potentially damaging substances to the surface and other materials (ie lacquered surfaces, Aluminium, glass, Zinc etc).

Oxide solvents are deemed unsuitable as are scouring liquors and all types of agents that produce acid or alkaline reactions or contain ingredients that may react in this way. Strongly abrasive mechanical cleaners are also unsuitable as they will damage the coated surfaces.

Conservation

In terms of conservation it should be noted that „new dirt“ cannot form a strong adhesive bond with the coated surface and therefore should be removable with ease and at relatively low cost, provided this is done on a regular basis. The frequency of such maintenance should be determined according to the environmental conditions of the location and suitable intervals be set in line with the cleaning agents used, as well as the stress and aesthetic demands on the appearance of the façade.

Maintenance Recommendations

1. All elements such as window and door frames as well as the cleaning agents should be in a cool condition (max. 25 °C) prior to cleaning.
2. Cleaning agents containing organic solvents are potentially damaging to the powder coated surfaces. Therefore if the application of solvents is required, white

spirit diluted with water, Isopropylalcohol or turpentine substitutes (for pollution by tar) should be used, whereby it is important to observe minimum contact times. The use of any other organic solvents may cause dulling or an unwanted buffing effect in the powder coating. If solvents of any kind are to be used, we always recommend a patch test application in an unobtrusive area.

3. For pre-cleaning pure wetting agent solutions such as washing up liquid diluted as normal are highly recommended.

4. For the timely maintenance of doors and façades we recommend the use of a maintenance preserver which ideally should be emulsion based. Depending on the degree of pollution, surfaces should be pre-cleaned with a neutral wetting agent followed by a high quality preserver.

5. Coated components that are not maintained regularly will be increasingly difficult and laborious to clean and over a period of years will develop dulling and therefore severe maintenance problems. Surfaces that have not been maintained for several years can only be cleaned

with a mildly abrasive agent, whereby it is particularly important that this should be followed by a high quality preserver.

Weathering at various Maintenance levels

In order to demonstrate the dramatic effect of the aforementioned dulling, which in its initial stages manifests itself by a distinct reduction in gloss (see chart Annual weathering), an Austrian GSB coater was commissioned to carry out a series of cleaning tests to prove the effect and benefits of regular maintenance (following charts with 1 / 2 / 6 cleaning intervals).

Current Situation

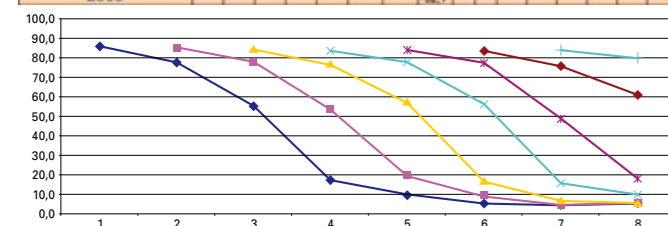
At the request of clients, maintenance recommendations need to be provided that take into account weathering guarantees of up to 10 years and maintenance instructions by coaters relevant thereto, whereby assurances given in terms of durability and their relevance to conditional maintenance remains in question.

Test Model

Since the year 2000 a weathering test series has been in progress involving matt

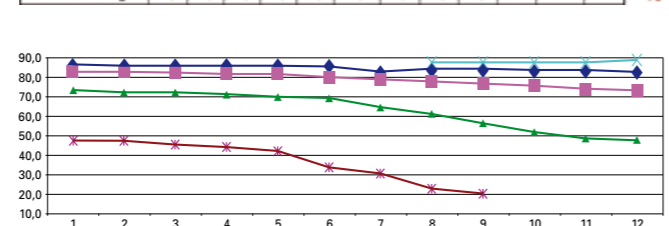
Results after 4 Years:

Annual Weathering		6005 gloss finish															
Start July 2002		Cleaning and further weathering each July															
Annual cleaning with water and sponge and gloss measurement		Gloss measurements at 60° in 2000 xx															
Weathering		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2002		85,8	77,7	65,2	17,2	9,9	5,2	4,4	5,0								
2003			85,0	78,0	53,2	19,4	8,3	4,5	5,0								
2004				84,1	76,5	57,0	15,9	8,5	8,0								
2005					83,7	79,2	56,2	15,7	9,9								
2006						84,0	77,4	48,8	17,9								
2007							83,3	75,5	60,9								
2008								84,0	80,0								
2009									82,1								



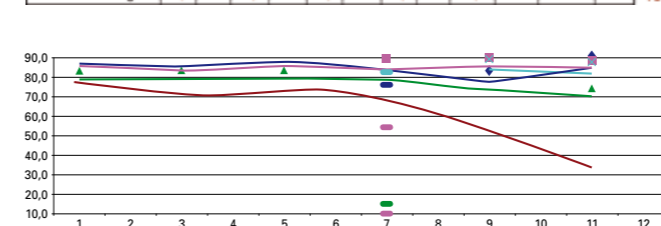
RAL 6005 gloss finish maintained on a monthly basis Weathered Sheets from 2005

Gloss	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
2005								87,7	87,8	87,5	87,4	88,5	84
After cleaning								87,8	87,8	87,7	87,7	88,7	84
2006	86,8	85,8	83,3	85,6	85,8	85,2	83,3	84,4	82,9	83,2	83,7	83,5	78
After cleaning	86,8	85,9	86,0	86,2	86,3	85,7	82,7	84,3	84,6	84,0	83,9	83,0	78
2007	82,9	82,8	82,3	81,7	81,3	79,9	78,9	77,8	76,6	74,7	73,9	73,3	56
After cleaning	83,1	83,1	82,4	81,8	81,5	80,0	78,9	77,8	76,6	75,9	74,2	73,7	56
2008	73,5	72,9	72,2	70,9	70,2	69,5	64,9	60,9	55,8	53,0	48,7	47,4	16
After cleaning	73,3	72,2	72,5	71,2	70,0	69,8	64,6	61,1	56,3	52,1	48,6	48,2	16
2009	47,8	46,3	45,6	44,1	40,0	34,6	30,1	22,1	20,2				10
After cleaning	47,7	47,1	45,1	44,0	41,8	33,8	30,2	22,6	19,9				10



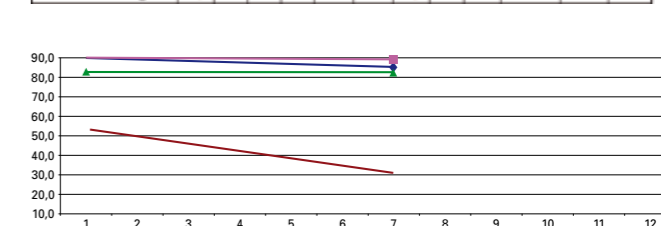
RAL 6005 gloss finish, cleaned with water and polished every 2 months Weathered Sheets from 2005

GLOSS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
2005													84
After cleaning										89,1		87,6	84
2006	89,3	88,2	93,0	91,2	90,6	91,0							78
After cleaning	92,4	90,9	92,9	89,8	83,3	89,8							78
2007	92,8	92,1	92,1	88,5	87,4	88,1							56
After cleaning	90,3	87,6	90,7	89,6	90,0	88,6							56
2008	90,2	90,6	87,7	83,7	72,5	71,6							16
After cleaning	84,0	83,8	84,1	83,1	78,5	74,5							16
2009	81,2	82,1	75,6	68,1	36,0								10
After cleaning	84,9	80,5	81,4	76,4	66,0								10



RAL 6005 gloss finish, cleaned with water and polished every 6 months Weathered Sheets from 2005

GLOSS	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Year
2005													84
After cleaning													84
2006	90,1					89,7							78
After cleaning	90,4					85,2							78
2007	87,5					85,2							56
After cleaning	90,8					89,1							56
2008	83,2					76,4							16
After cleaning	82,7					82,9							16
2009	60,4					45,1							10
After cleaning	78,0					68,0							10



and gloss finish RAL-6005 samples (the measured values concerning the weathering 2005, only Annual weathering, serve, for the purpose of equal time, as reference in the interval charts and they are listed under the column Year on the right), whereby each year a further one of 10 identically coated samples is exposed. As part of the test, each time a new sample is added all test samples are cleaned with water. Now a comprehensive test involving systematic maintenance is aimed at demonstrating the effects and benefits thereof. For the purpose of this test, every year 3 identically coated samples are added, which were cured using the following powders: RAL 6005 29/50150 / RAL 6005 matt 29/50780 / HF 605 fine 68/50093. Prior to their first exposure all samples are cleaned with washing up liquid diluted in water.

Samples are then maintained as follows:

- Each month they are washed with

a sponge dipped in washing up liquid diluted in water and wiped dry with a cloth.

- Every other month they are washed as above and buffed with Powder Polish maintenance preserver. *
- Every 6 months they are washed as above and buffed with Powder Polish maintenance preserver. *

NB: the 605-Series with HWF-Fine Structure is cleaned with Powder Polish A (non abrasive) only, whereby before and after maintenance gloss values are being measured and recorded. Weathering started in July 2005 and the test will only conclude for all samples once the first samples have been weathered for a period of 12 years. This will produce samples that will display all stages of weathering.

* www.piesslinger.at

Conclusion

Upon examining results after 4 years (refer to charts) it becomes clear that standard coated samples that have been cleaned only once a year with water, have virtually reached the permissible limit of 50% gloss retention after only 2 years (commensurate with 1 year of Florida weathering and 2 years in Middle Europe).

However, if samples are cleaned twice a year with a maintenance preserver as recommended, the residual gloss is maintained at nearly 90%.

After 4 years the results become even more dramatic with only 10% of residual gloss for the annual maintenance with water (chart Annual weathering), yet still over 70% for samples that have been cleaned twice a year with a maintenance preserver. Ergo, regular cleaning is an absolute PREREQUISITE to maintaining coated surfaces.

GSB International – the quality association for Europe

Throughout Europe, GSB International sets quality standards for the coating of aluminium and steel, indicated by the map showing GSB Member countries.

GSB currently has 144 members from 25 countries. Membership continues to increase whilst GSB is working with international partners and test institutions in Greece, the Czech Republic and Austria to name but a few. Aimed at the effective inclusion of international members, GSB maintains regional networks and regularly holds English language training courses.



Imprint

The info letter of GSB International is published three times a year in German and English language.

GSB INTERNATIONAL e.V.
Quality Association for coated piecework building components

Managing Director: Thilo Brückner

Franziskanergasse 6
D - 73525 Schwäbisch Gmünd
Phone +49 (0) 71 71 / 6 80 55
Fax +49 (0) 71 71 / 53 00
info@gsb-international.de
www.gsb-international.de

Pictures:
photo library GSB INTERNATIONAL e.V.

Design: buero-sieber.de