LISEGA SPRING MATERIAL AND COATING

As coil springs are considered to be the core items of our constant and variable hangers, LISEGA has paid very particular attention to the surface treatment and corrosion protection long since.

The spring material we selected according to German standard DIN 17221 and DIN 17223.

LISEGA		Chemical components in weight [%]							
Load Group	**Spring material**	**C**	**Si** killed mat. max.	**Mn**	**P** max.	**S** max.	**Cu** max.	**Cr**	**V**
C,D,1,2	Spring steel C	0,50 to 1,00	0,35	0,30 to 1,50	0,030	0,030	0,12	-	-
3 and 4	FD SiCr	0,50 to 0,60	1,20 to 1,60	0,50 to 0,90	0,030	0,025	0,12	0,50 to 0,80	-
5 …	51CrV4	0,47 to 0,55	0,15 to 0,40	0,70 to 1,10	0,035	0,035	-	0,90 to 1,20	0,10 to 0,20

Preceded by technical and economical feasibility studies we have introduced in 1987 the so called cathodic immersion enamelling coating for springs only. The process itself is known under the collective term of electrophoresic paint system.

The goods are first cleaned in a degreasing alkali bath, subsequently activated in a Titatium-crystal solution to condition the size of zinc crystals on the surface. A further bath treatment with zinc-phosphates, called phosphatisation, creates an even surface with a good conductivity.

The workpiece that shall be enameled is immersed in the lacquer bath for about 60 - 120 seconds. Then the electrical current is applied between the workpiece and the lacquer, similar to a galvanic bath, so that the lacquer is separated on the surface of the coil. The coating thickness of this process lies in the area of 12 - 20 my.

Subsequent thermal treatment polymerizes (interlaces) the paint, creating a very durable surface.

The advantages of this process lie in the even coat-formation, in the coating of hollow spaces and locations with difficult access, and no drops or formation of runs.

The general features of an electrophoresic paint system are to be considered as ‘good all-round’.

These quality features together with the possibility of process - technical rationalization have established this coating in nearly all branches; for example the automotive and railway industries use a similar coat for their helical coil springs.

The disadvantage of plastic coating (e.g. neoprene) is that a possible scratch enables moisture to penetrate. This creates severe corrosion, which is not visible, as the coil is covered by the plastic. The consequence might be a spring crack.

Salt spray tests carried out by an independent laboratory - results are available on request - have proven our superior spring surface protection compared with the neoprene coating.

LISEGA spring with electrophoresic paint system

Common hanger spring coated with Neopren