

# APPLICATION NOTE

## Measurement of SAM (sprayable acoustic material) coatings for the automotive industry

In the automotive industry, a great deal of effort goes into reducing vehicle weight by using lighter components. An example is the use of SAM (sprayable acoustic material) coatings in vehicle interiors. These locally applied insulation layers replace the larger and heavier soundproofing mats previously used. However, in order to meet the targets for sound protection, weight, clearance and cost, the thickness of these coatings must be carefully monitored.

In addition to its light weight, sprayed-in acoustical insulation has the further advantage that it can be applied precisely and selectively by robots, allowing a full automatic manufacturing process. Typically, these SAM coatings are between 2 and 4.5 mm thick, very often located in places that are difficult to reach, and found on top of either aluminium or steel – that is, on both ferrous and non-ferrous substrates.

Developed by FISCHER for just this measurement task, the FA14 probe employs the eddy current method, which is effective for measuring non-conductive coatings of up to 5 mm thickness on conductive base materials.



Fig. 1: Locally applied SAM coatings in the passenger footwell, measured with DUALSCOPE® FMP40 and FA14 probe (Daimler AG, Mercedes-Benz Bremen factory)

But above and beyond these fundamental specifications, the FA14's compact elbow design also makes it possible to take accurate readings even in very close areas: The sensor has an external casing with a total diameter of 20 mm, and its field focus is optimised such that measurements can be taken – without edge influence – on spots no bigger than the probe itself.

Of course, as do all FISCHER eddy current probes, the FA14 compensates for conductivity. In practice, this means that differences in the conductivity of the base material, e.g. when various aluminium alloys are used, exert no influence on the coating thickness measurement. The probe of FA 14 can be connected to the handheld instruments of the FMP-family, either DUALSCOPE® or ISOSCOPE® models.

Measuring point	Target Min (mm)	Target Max (mm)	Actual (mm)
MP1	2.7	3.5	2.8
MP2	2.7	3.5	2.9
MP3	2.7	3.5	3.1
MP4	1.7	2.5	2.0
MP5	2.7	3.5	2.9
MP6	2.7	3.5	2.9
MP7	3.7	4.5	3.4 !
MP8	1.7	2.5	2.1

Fig. 2: Example of typical measurement values from quality control of SAM coatings on eight predefined measuring points, where MP7 is outside the tolerance (Daimler AG, Mercedes-Benz Bremen factory)

With the handheld instruments of the FISCHER FMP-family and the specially developed FA14 probe, SAM coatings can be measured accurately and easily even in hard-to-reach areas and on varying base materials (aluminium or steel). Your local FISCHER representative will gladly answer further questions.