

Testing the Odour Quality of Non-Metallic Materials

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Abstract-

This report has been compiled on the completion of 3 week summer training at ICAT. It discusses about a very necessary and least popular part of the Automotive Industry i.e. Testing and Certification. It discusses about one of the government notified Testing body ICAT which is one of just 6 such organisations in India. This report deals with the odour quality testing of non-metallic materials that are used for automobile compartment and parts associated with the compartment.

Keywords –Odour Quality, Testing.

I. INTRODUCTION(Heading1)

The Project aims at creating core global competencies in Automotive sector in India and facilitate seamless integration of Indian Automotive industry with the world as also to position the country prominently on the global automotive map.

II. CMEL- Component & Material Evaluation Lab

As it is clear from the name CMEL is a state of art laboratory established by iCAT equipped with many national, international and self development test equipments for the testing and evolution purpose. These equipments are also used for certification of specimen as per various norms both national and international.

III. EVALUATION

Evaluation is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards. It can assist an organization to assess any aim, realisable concept/proposal, or any alternative, to help in decision-making; or to ascertain the degree of achievement or value in regard to the aim and objectives and results of any such action that has been completed. The primary purpose of evaluation, in addition to gaining insight into prior or existing initiatives, is to enable reflection and assist in the identification of future change.

Evaluation is often used to characterize and apprise subjects of interest in a wide range of human enterprises, including the arts, criminal justice, foundations, non-profit organizations, government, health care, and other human services.

A systematic, rigorous, and meticulous application of scientific methods to assess the design, implementation, improvement, or outcomes of a program. It is a resource-intensive process, frequently

requiring resources, such as, evaluator expertise, labour, time, and a sizeable budget

IV. ODOUR TEST

When we purchase items, odor is one of the criteria we use to judge products. A delightful odor causes an attraction to an item while a noxious odor may cause one to walk away from an item. In the automotive industry, the same principle holds true. While with a single item, an apple, or piece of clothing, the control over odor is minimal because the article is relatively simple. The automobile has greater challenges since it is a complex article with a variety of materials each that potentially may emit odors that could adversely affect a sale or customer satisfaction. Therefore it is critical to be able to test each component that is used in the construction of a vehicle.

Automotive interior pollution has become a concerned topic of the general consumers. World's leading automotive companies have all developed standards to monitor their own business-related substances which may create a scent in a car.

Control vehicle air pollution, improve air inside air quality, is today's development of domestic and foreign automobile technology issue. It is reported that the forthcoming national air pollution limits for standard car, car interior pollution has become a hot concern for the public. Sometimes there is unknown odor in a car, even some instrument can not identify, therefore there is a industrial testing service for automotive manufacturing industry, odor test.

Odor refers to automotive interiors smell directly or indirectly from any part of an automotive interior, based on human olfactory senses and a comfort evaluation of vehicle quality. It should be noted that some of the odor may be harmful, and some good small may also be harmful. The smell in a vehicle is a

key concern when purchasing a vehicle, so car manufacturers are requiring their suppliers to carry out odor testing to prove their products are free of odor, to ensure that the car smell is not cause consumer dissatisfaction.

Odor testing requires the intimate involvement of people to do testing and rating of various materials. With the increased emphasis of corporations to improve Environment, Health and Safety, there is a desire to minimize the human interaction with odor testing. At the same time and in conjunction with an increased emphasis on reducing volatile organic compounds in vehicles, rigorous testing is required to produce vehicles with acceptable odor performance. Through component level odor testing, hopefully the full vehicle odor test will be acceptable

V. TESTING(Heading 2)

- i. SCOPE OF THE PROJECT: The odour quality of non-metallic materials that are used
- b.

for automobile compartment and parts associated with the compartment.

ii. TEST OUTLINE :

1. Preparation for water extraction
 - a. Prepare test equipment and samples
2. Water extraction
 - a. Heat the sample, sample component that emits smell.
3. Odour test
 - a. Prepare bag,make standard odour, pour sample, smell, summarize results.

iii. Preparation of water extraction

1. Preparation of test equipment
 - a. Table 1 lists the tools and devices necessary for the test. Test equipment, tools and devices must be free from smell, except for reagents.

Table 1 - Test equipment

2. One hour after the

<u>PRODUCT</u>	<u>MATERIAL</u>	<u>DIMENSIONS</u>	<u>QUANTITY</u>
CHAMBER	STAINLESS STEEL	150*150*150mm VOLUME - 3.1L	1
AIR BUBBLER	GLASS	CAP DIAMETER - 20mm VOLUME - 22ml LENGTH - 143mm	1
COMPRESSED AIR PUMP		FLOW RATE - 1 L/min	1
SILICON TUBES	SILICON	INSIDE DIAMETER - 5mm OUTSIDE DIAMETER - 9mm	2m tube
TEFLON TUBES	TEFLON	INSIDE DIAMETER - 5mm OUTSIDE DIAMETER - 8mm	5-10 m tube
GLACIAL ACETIC ACID		MIN. CONC. - 99.7%	500ml
NITROGEN GAS		MIN. CONC. - 99.999%	1 CYLINDER
MILER BAG	PET	OUTSIDE DIAMETER - 7mm VOLUME - 3 L	1
JOINT	FLUOROCARBON RESINS	OUTSIDE DIAMETER - 8mm	
CAP	SILICON RUBBER		

iv. PREPARATION OF SAMPLE :
 Prepare 15 test pieces when using a 4-L container.

v. WATER EXTRACTION :

- HEATING OF SAMPLE :
 1. Place the sample in the stainless can.
 2. Heat using the dryer. Heating temperature should be 80°C. The heating duration should be 4 hours after the temperature in the dryer reached the specified temperature.
- Sampling of component that emits smell
 1. Pour 8ml of non-smell distilled water in the bubbler shown in figure and place the bubbler in the container with ice in it.

- Smelling should be done by 5 different panellists against the standard smells.
- Summarize the results.

VI. CONCLUSION

Sample and the other odor samples from the sample set were tested by the odor panel to determine concentration, intensity, persistency, character and Hedonic tone. The results of testing Sample are summarized below:

TABLE 2 - RESULTS

Detection Threshold

430

Recognition threshold

180

Intensity as ppm n-butanol

37

Character descriptors

Sewer
Ammonia
Amine

Hedonic tone

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