



Exploration & Production

GENERAL SPECIFICATION

HVAC

GS EP HVA 217

Sound Attenuators

04	01/2012	Integration of Data Sheet
03	10/2005	Addition of "EP" root to GS identification
02	10/2004	Updating
01	12/2003	Change of Group name and logo
00	10/2002	First issue
Rev.	Date	Notes

Owner: DEV/TEC

Managing entity: DEV/TEC/MTH



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1. Scope

The purpose of this document is to define the minimum requirements for design and construction of sound attenuator.

The words and expressions in capital characters are defined inside the general specification **GS EP HVA 801**.

2. Reference documents

The reference documents listed below form an integral part of this General Specification. Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and supplements, is the latest revision published at the EFFECTIVE DATE of the CONTRACT.

Equipment and installations must be in accordance with (in order of precedence):

1. The country local regulations where equipment and/or installations shall be operated
2. Total General Specifications as listed in **GS EP HVA 000**
3. The International Standards
4. The French Regulation (when Country local regulation does not exist).

International System of Units (SI)

Notes:

- In case of discrepancy between documents the more stringent requirements shall apply.
- The HVAC VENDOR or CONTRACTOR may propose proven improvements to the reference documents but shall obtain written approval of the COMPANY prior to implementation.
- A International Standard is a good "engineering practice" which shall be recognised and taken into consideration by VENDOR, SUPPLIER, MANUFACTURER and/or CONTRACTOR. If required, the translation of the standards must be included into HVAC scope.
- The latest revision of Standards, codes, regulations and the published errata if any must be used and applied by VENDOR, SUPPLIER, MANUFACTURER and CONTRACTOR.

Standards

Reference	Title
Not applicable	

Professional Documents

Reference	Title
Not applicable	



Regulations

Reference	Title
Not applicable	

Codes

Reference	Title
Not applicable	

Other documents

Reference	Title
Not applicable	

Total General Specifications

Reference	Title
GS EP HVA 000	List of HVAC specifications
GS EP HVA 801	Terminology, Definitions, Abbreviations

3. Construction

3.1 Frame

The material of frame must be steel sheets of thickness at least equal to 1 mm and with a grade selected in accordance with the location of the sound attenuator:

- Outside of buildings: stainless steel 316 L
- Inside buildings: galvanised steel.

Reinforcements must be installed if any baffle dimension is greater than 1800 mm.

3.2 Baffles

Inside the frame, several parallel baffles, regularly spaced, shall be installed. The structure of the baffles shall be made of the same material than the frame.

Each baffle internal cavity shall be filled with sound attenuation media of homogeneous density, vertically arranged in successive layers.

A one millimetre glass fibre linen, conglomerated at high temperature, and a perforated steel plate, must be placed on each outer face of media to avoid particles migration.

3.3 Assembly

Assembly must be realised by 4 mm rivets. Rivets are made of aluminium or of the same material than the frame.

4. Characteristics of sound attenuation media

- Mean density: 65 kg/m³ (guaranteed minimum density: 55 kg/m³)
- Maximum percentage of chlorides: 6 ppm
- Fibre aqueous solution pH: 7 at 15°C and 9.5 at 80°C
- Composition:
 - SiO₂: 42 to 48%
 - Al₂O₃: 13 to 17%
 - TiO₂: 1.1 to 1.5%
 - FeO: 3 to 11%
 - CaO: 13 to 25%
 - MgO: 7 to 15%
 - MnO: 0.1 to 0.5%
 - Na₂O: 2 to 4%
 - K₂O: 0.4 to 0.8%
 - Bore: < 50 ppm
 - Cobalt: < 20 ppm
- Capillary: null
- Water absorption by immersion: ≤ 1% in volume
- Mineral wool composed of inorganic fibres
- Fire classification: M0 (French regulation)
- Maximum migration of fibres in 5 hours:
 - at 15 m/s, migration lower than 0.5 µg/m³/m²
 - at 45 m/s, migration lower than 0.9 µg/m³/m²
- Sabine coefficients:

	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz
100 mm Thickness	0.64	1.1	1.1	1.0	0.96	0.96
200 mm Thickness	0.93	1.11	1.12	1.0	0.96	0.93



5. Presentation of calculation results

The results of calculation shall be indicated in DS EP HVA 217 data sheet which must be used as an integral part of the present specification.

One data sheet per sound attenuator must be filled.

6. Documents to be supplied

Due date	Document
(1)	Preliminary drawings of sound attenuator with dimensions and weight
(1)	Calculation notes including pressure drops and attenuation per octave band
(2)	Final drawings of sound attenuator with dimensions and weight

Due dates:

(1) Within 30 days after receipt of the order

(2) Two weeks before delivery.

A fortnight will be given to COMPANY or to Engineering, to control and comment the documents. The comments shall be taken into account by the MANUFACTURER. They are a contractual element.

All documents shall be provided in 4 paper copies and 1 electronic copy on CD ROM (AutoCAD 2000 for drawings and PDF for texts).

Notes:

The transmitted documents shall be specific to the supplied equipment. General documents are not acceptable.

Documents are an integral part of the supply. In case of delay in the issue of documents, the same liquidated damages than for late delivery of equipment may apply.

The transmitted documents between the MANUFACTURER or CONTRACTOR and the COMPANY or Engineering shall be typed. The hand written documents will be refused.

"Proprietary information" cannot be claimed in order not to supply any of the requested documents.



Appendix 1 Sound attenuator – Data Sheet



Exploration & Production

General Specification

Date: 01/2012

GS EP HVA 217

Rev: 04

Appendix 1



Exploration & Production

GENERAL SPECIFICATION

HVAC

DS EP HVA 217

Sound attenuator - Data Sheet

04	10/08	General updating
03	10/06	Revision
02	10/05	Addition of "EP" root to GS identification
01	12/03	Change of Group name and logo
00	10/02	First issue
Revision	Date	Notes

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SOUND ATTENUATOR - DATA SHEET

Data sheet presentation

This data sheet is composed of one sheet.

Sheets use method:

Only fields to fill in by the *CONTRACTOR* are accessible.

For major part of these fields, contextual help is accessible when roll-over with the mouse.

The contextual help includes a definition of field to avoid misunderstanding.

The "Cover" and "presentation" sheets shall not be attached to the data sheet submitted to *COMPANY* for approval.

An "Highlighting" button allows to identity the fields to modify or to fill in for each sheet.

Before printing a sheet, press "Without highlighting" button.

Data sheets approval:

The data sheets have to be fully filled in by *CONTRACTOR*.

The fully informed data sheet has to be approved by the *COMPANY*'s Specialist before purchasing the equipment.

Within *HVAC* documents, expression in capital characters and *ITALIC* are defined within the "Terminology, definitions and abbreviations" specification.



Exploration & Production

General Specification

Date: 01/2012

GS EP HVA 217

Rev: 04

Appendix 1

 TOTAL Exploration & Production	COMPANY			
	PROJECT NAME			
	DATA SHEET			
SOUND ATTENUATOR				
Doc. number:		Contractor document N°:		
Equipment location:				
Tag No:		Model:		
System No:		Serial No:		
Sub-system No:				
Supplier:				
Manufacturer:				
Subject	Rev.	Stat.	Date	By:
1 Noise data: Sound pressure level SPL in dB (ref. 10 ⁻¹² W)				
Octave band centre frequency (Hz)				
	32	63	125	250
	500	1000	2000	4000
	8000			
Sound attenuator inlet:				
Required at sound attenuator outlet:				
Resulting sound pressure level at sound attenuator outlet				
Air flow rate at sound attenuator inlet*:		m ³ /h		
Max. air inlet temperature (& relative humidity):		°C		
Concomitant relative humidity:		%		
Min. air inlet temperature (& relative humidity):		°C		
Concomitant relative humidity:		%		
Air operating pressure:		Pa		
Air design pressure:		Pa		
Air velocity at sound attenuator inlet:		m/s		
Air velocity through sound attenuator:		m/s		
Pressure loss through sound attenuator:		Pa		
Baffles thickness:		mm		
Baffles number:				
Gap between baffles:		mm		
Baffles perforated plates thickness:		mm		
Diameter of perforations of plates:		mm		
Density of perforation of plates:		%		
Casing thickness:		mm		
Flanges thickness:		mm		
Media density:		kg/m ³		
Fiber aqueous solution pH:				
at 15°C:				
at 80°C:				
Capillary value:				
Percentage of water absorption by immersion:		%		
Fire classification (as per French regulation):				
Maximum migration of fibers during 5 hours:				
at 15 m/s:		µg/m ³ /m ²		
at 45 m/s:		µg/m ³ /m ²		
Migration Test Laboratory's name:				
Migration Test Laboratory's document reference:				
Maximum percentage of chorides:		ppm		
* : nominal conditions of Project.				