

# DIN EN 14035-31:2006-01 (E)

## Fireworks - Part 31: Shell-in-mortars - Specification and test methods

---

<b>Contents</b>		<b>Page</b>
Foreword .....		4
1	Scope .....	6
2	Normative references .....	7
3	Terms and definitions .....	7
4	Construction .....	7
4.1	Means of ignition .....	7
4.2	Attachment of initial fuse .....	7
4.3	Protection of initial fuse .....	7
4.4	Transmitting fuse .....	7
4.5	Materials of mortar and shell case .....	8
4.6	Integrity .....	8
4.7	Propellant charge .....	8
4.8	Location of the shell .....	8
4.9	Calibre .....	8
4.10	Gross mass .....	8
4.11	Net explosive content .....	8
4.12	Mass of report and/or bursting charge .....	8
4.13	Vertical stability .....	9
5	Performance .....	9
5.1	Initial fuse .....	9
5.2	Principal effects .....	9
5.3	Functioning .....	9
5.4	Sound pressure level .....	9
5.5	Height of explosions .....	9
5.6	Burning matter .....	9
5.7	Stability .....	9
5.8	Integrity of the firework case after functioning .....	9
6	Minimum labelling requirements .....	9
6.1	General .....	9
6.2	Type name and category .....	10
6.3	Safety information .....	10
6.3.1	General .....	10
6.3.2	Shell-in-mortars .....	10
6.3.3	Placing instructions .....	10
6.4	Name, address and telephone number of manufacturer or distributor or importer .....	11
6.5	Reference to this document .....	11
6.6	Printing .....	11
6.6.1	Labelling .....	11
6.6.2	Type size .....	11
7	Test methods .....	11
7.1	Determination of gross mass (type test) .....	12
7.1.1	Apparatus .....	12
7.1.2	Procedure .....	12
7.2	Determination of calibre and enclosure of propellant charge (type test) .....	12
7.2.1	Apparatus .....	12

7.2.2	Procedure .....	12
7.3	Determination of the location of the shell (type test and batch test) .....	12
7.3.1	Apparatus .....	12
7.3.2	Procedure .....	12
7.4	Attachment of initial fuse (type test and batch test) .....	13
7.4.1	Apparatus .....	13
7.4.2	Procedure .....	13
7.5	Vertical stability test, if applicable (type test) .....	14
7.5.1	Apparatus .....	14
7.5.2	Procedure .....	14
7.6	Performance (type test and batch test) .....	14
7.6.1	Test environment .....	14
7.6.2	Apparatus .....	14
7.6.3	Procedure .....	16
7.7	Determination of net explosive content and mass of report and/or bursting charge (type test) .....	17
7.7.1	Apparatus .....	17
7.7.2	Test specimen .....	17
7.7.3	Procedure .....	17
7.8	Labelling (type test and batch test) .....	17
Annex A (normative) Type testing .....		18
A.1	General .....	18
A.2	Number of shell-in-mortars to be tested .....	18
A.3	Loose pyrotechnic composition .....	18
A.4	Thermal conditioning .....	19
A.5	Mechanical conditioning .....	19
A.5.1	Apparatus .....	19
A.5.2	Procedure .....	22
A.6	Test report .....	22
Annex B (normative) Batch testing .....		25
B.1	General .....	25
B.2	Sampling plans .....	25
B.3	Unit of product .....	25
B.4	Nonconformity .....	25
B.5	Test report .....	26
B.6	Acceptance or rejection of a batch .....	27
B.6.1	Nonconforming units .....	27
B.6.2	Critical nonconforming units .....	27
B.6.3	Major nonconforming units .....	27
B.6.4	Minor nonconforming units .....	27
Annex C (informative) A-Deviations .....		28