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Schutzvermerk ISO 16016 beachten/Please note protection notice ISO 16016

1 Scope of application and purpose 适用范围和目的

This standard describes basic notes and expectations VON ARDENNE has for the implementation of surface finishing by abrasive blasting. The standard applies both to internal processing and processing by external suppliers.

本标准描述了冯·阿登纳通过磨料喷砂实现表面处理的基本注意事项和期望。该标准既适用于内部加工，也适用于外部供应商的流程。

All content of this standard is considered part of the order specification, must be adhered to by the supplier on a binding basis and must be already evaluated within the scope of the feasibility study. Notify VA immediately if you become aware of any discrepancies or if any deviations are unavoidable before or during commissioning.

本标准的所有内容均被视为订单规范的一部分，供应商必须在具有约束力的基础上遵守，并且必须在可行性研究范围内进行评估。如果您发现任何差异，或者任何偏差在调试前或调试期间都无所不为，请立即通知 VA。

Requests for approval of deviations must be submitted using the Application for Deviation/Change Approval form (available from VA Purchasing).

偏差批准请求必须使用偏差申请/变更批准表（可从 VA 采购中获得）。

2 Terms and abbreviations 术语和缩写

| Term/abbreviation | Definition/description |
|-------------------|--|
| VA | VON ARDENNE GmbH |
| R _z | Roughness parameter for maximum height of profile, defined in ISO 4287 (4.1.3) |

| 术语/缩写 | 定义/描述 |
|----------------|------------------------------------|
| VA | 冯阿登纳有限公司 |
| R _z | 在 ISO 4287 (4.1.3) 中定义的轮廓最大高度粗糙度参数 |

3 Scope and general provisions 范围和一般规定

- (1) The purpose of carrying out surface finishing by abrasive blasting can be:
通过磨料喷砂进行表面处理的目的可以是：
 - a. Achieving a specific surface roughness required by VA (roughening)
实现 VA 所需的特定表面粗糙度（粗加工）
 - b. Achieving a state of cleanliness in accordance with AN3001 (blast cleaning)
根据 AN3001（喷砂清洁）实现清洁状态
 - c. Shot peening
喷丸加工
- (2) The parts to be blasted, stating the blasting method, the blasting abrasive (if necessary), the roughness and the processing surface in the form of the drawing entry in the VA design documents shall be described as follows and identified for the supplier:
在 VA 设计要求中，以图纸入口的形式进行爆破的部件，说明爆破方法、爆破磨料（如有必要）、粗糙度和加工表面，应描述如下，并确定为供应商：

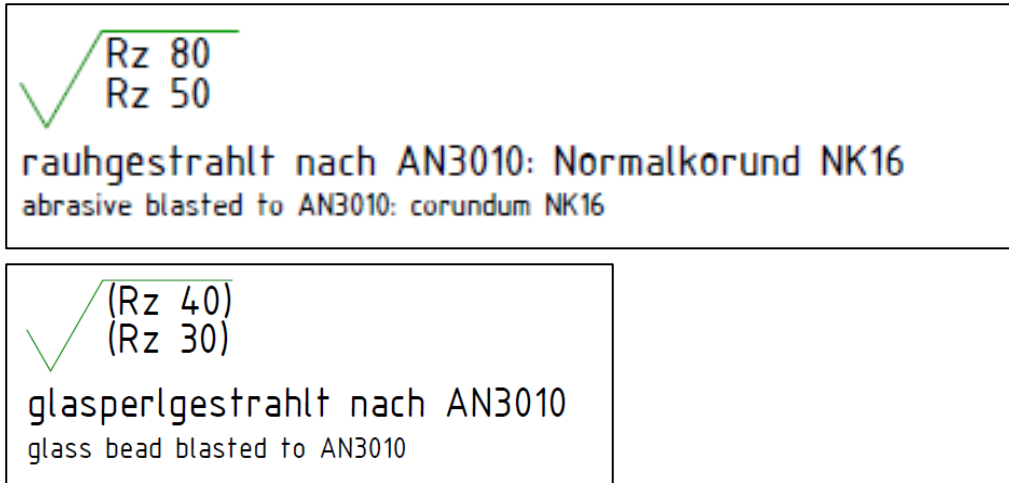


Illustration 1/2: Example drawing stamps according to AN3010

4 General requirements 一般要求

- (1) It is assumed that the abrasive blasting system operator has specific knowledge so that parameters such as blasting pressure, radiation angle, blasting speed, and so on are the responsibility of the supplier and are not specified by VA.
假定磨料喷射系统操作者具有特定的知识，因此爆破压力、辐射角、爆破速度等参数由供应商负责，未由 VA 指定。
- (2) Surface finishing by abrasive blasting can either relate to the entire part or to individual surfaces intended for it. A corresponding specification can be found on the drawing.
磨料喷砂表面精加工可与整个零件或用于该零件的单个表面相关。可以在绘图上找到相应的规格。
- (3) It must be ensured that no contaminated blasting abrasive gets onto vacuum parts (e.g., iron particles on stainless steel surfaces). The operator of the blasting abrasive system shall therefore ensure that they work with two qualities of blasting abrasive cleanliness for aluminium oxide abrasive blasting and that they use the blasting abrasives in a pure and separate manner in regard to the blasted parts.
必须确保没有受污染的喷砂磨料进入真空部件（例如不锈钢表面的铁颗粒）。喷砂磨料系统的操作者应确保其具有两种喷砂磨料清洁性，以纯正、独立的方式处理喷砂部件。
- (4) The compressed air must be filtered and free of water and oil.
必须过滤压缩空气，不含水和油。

5 Preparation of surface finishes 表面表面处理的准备

- (1) The parts must be cleaned and degreased before abrasive blasting - also refer to AN3001 -
在磨料喷射之前，必须清洁和脱脂部件 - 也请参阅 AN3001 -
- (2) Sealing faces, screw-on surfaces, holes with specified tolerances and threaded holes are not blasted unless this is expressly required. They are to be covered or sealed in a suitable manner.
密封面、螺钉表面、具有指定公差的孔和螺纹孔不会喷砂，除非有明确要求。它们应以适当的方式被覆盖或密封。

6 Blasting result 爆破结果

- (1) A homogeneous blasting pattern is expected on all surfaces concerned.
所有相关表面上均匀的爆破模式。
- (2) Blasting residues (blasting abrasive and/or removed dust and/or flaked off layers) must be removed completely (use lint-free cloths), vacuumed or blown off.
爆破残留物（爆破磨料和/或清除灰尘和/或剥落层）必须完全重新移动（使用无绒布）、吸尘或吹掉。
- (3) Any “smeared” scale or extraneous rust residues on the surface caused by blasting with too flat of a blasting angle must be removed by pickling.
爆破时，爆破角度过平造成的表面任何“污迹”刻度或异锈残留物，必须通过腌制去除。
- (4) After blasting, blasted surfaces can only be handled with lint-free and clean gloves.
爆破后，爆破表面只能用无绒和干净的手套处理。
- (5) Adhesive foils and adhesive residues must be removed with grease-free solvents.
必须用无油脂溶剂去除粘合箔和粘合剂残留物。
- (6) Blasted parts must be stored and transported in sealed packaging which completely protects the parts.
爆震部件必须储存和运输在密封包装中，从而完全保护零件。
- (7) Optical surfaces outside the vacuum must be preserved by suitable means (e.g., polystyrene protection PTX 100).
真空外的光学表面必须通过适当的方法（例如聚苯乙烯保护 PTX 100）进行保存。

7 Checking the blasted result 检查爆炸结果

7.1 Blast cleaning 爆破清洁

→ Compare purity testing according to AN3001.

The surface roughness to be achieved serves as a guide value and is used as an evaluation standard if there is insufficient homogeneity of the blasting result.

根据 AN3001 对比洁净测试。

要达到的表面粗糙度作为参考值，如果爆破结果的均匀性不够，则用作评估标准。

7.2 Glass bead blasting 玻璃珠爆破

The qualitative check of the blasting result during shot peening is done in a visual inspection. The goal is an homogenous blasting result.

在目视检查中对射砂过程中爆破结果进行定性检查。目标是一个同质的爆破结果。

7.3 Roughening 粗加工

- (1) The qualitative testing of the blasting result in the case of roughening should take place in two steps:

在粗加工情况下对爆破结果进行定性测试，应分两步进行：

- a. First of all, a visual inspection for a uniform, homogeneous blasting pattern must be carried out.

首先，必须对统一、均匀的爆破模式进行目视检查。

b. At the most visually noticeable points, i.e. where a minimum or maximum roughness is expected, the required roughness must be demonstrated using a roughness measurement.

在视觉上最明显的点，即预期最小或最大粗糙度，必须使用粗糙度测量值来证明所需的粗糙度。

(2) Calibrated roughness measuring devices of the manufacturer's choice are to be used for qualitative testing of the blasting result.

制造商选择的校准粗糙度测量装置用于对爆破结果进行夸力测试。

(3) The roughness is measured over a measuring distance of 5 mm.

粗糙度在 5 mm 的测量距离内测量。

(4) If there is a deviation from the required roughness, the procedure must be repeated 3 times within a circle diameter of 5.0 cm.

如果偏离要求的粗糙度，必须在直径为 5.0 厘米的圆内重复 3 次。

(5) If all 3 determined roughness values are outside the required specification, there is a deviation from the specification.

如果所有 3 个确定的粗糙度值都超出所需规格，则与规范有偏差。

8 Other applicable documents 其他适用文件

ARDENNE Standard AN3001 – Requirements for the manufacturing of vacuum parts

ARDENNE 标准 AN3001 – 真空零件制造要求

9 Change index 更改索引

| Brief description of the change | Version | Date of change | Prepared by |
|---------------------------------|---------|----------------|-------------|
| Initial approval | 1.0 | 10/2020 | C. Heilmann |

| 更改的简要说明 | 版本 | 更改日期 | 准备者 |
|---------|-----|---------|-------------|
| 初始批准 | 1.0 | 10/2020 | C. Heilmann |

