



Rubber hoses and hose assemblies for underground mining — Textile-reinforced air and water type

Tuyaux et flexibles en caoutchouc pour les exploitations minières souterraines — Types pour l'air et l'eau avec armature textile

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ISO/TR 8354 was prepared by Technical Committee ISO/TC 45, *Rubber and rubber products*.

The reasons which led to the decision to publish this document in the form of a technical report type 1 are explained in the Introduction.

0 Introduction

This Technical Report has been prepared in order to provide minimum acceptable requirements for antistatic and flame-resistant textile-reinforced air and water hose for use in underground mining.

Work began in 1978 and resulted in circulation of a draft proposal, ISO/DP 6805-1, in 1979. Further work was then deferred pending the development of test methods, particularly that for flammability. It was then agreed in 1982 that another document should be issued, under a new number, ISO/DP 8354, in order to avoid confusion with parallel work on wire reinforced hydraulic hose, at that time ISO/DIS 6805-2 but since published as International Standard ISO 6805 : 1984. However, when circulated as a draft International Standard, this document did not achieve the necessary support for further progress. Moreover, in 1985, it was reported that national regulations in a number of countries meant that broad agreement on this subject was extremely unlikely.

In view of the foregoing, ISO/TC 45/SC 1 decided that draft International Standard ISO/DIS 8354 should be issued unaltered as a type 1 technical report.

1 Scope and field of application

This Technical Report specifies the requirements for one type of textile reinforced hose for use with air and water having a design working pressure from 0,7 to 1,4 MPa, dependent upon the bore size. The hose is designed for use in underground mining applications, where there is a specific requirement for the hose to have antistatic and flame-resistant properties.

2 References

ISO 3, *Preferred numbers — Series of preferred numbers.*

ISO 37, *Rubber, vulcanized — Determination of tensile stress-strain properties.*

ISO 188, *Rubber, vulcanized — Accelerated ageing or heat-resistance tests.*

ISO 1307, *Rubber and plastics hoses — Bore diameter and tolerances on length.*

ISO 1402, *Rubber and plastics hoses and hose assemblies — Hydrostatic testing.*

ISO 4671, *Rubber and plastics hoses and hose assemblies — Methods of measurement of dimensions.*

ISO 6945, *Rubber hoses — Determination of abrasion resistance of the outer cover.*

ISO 7751, *Rubber and plastics hoses and hose assemblies — Ratios of proof and burst pressure to design working pressure.*

ISO 8030, *Rubber and plastics hoses — Underground mining — Method of test for flammability.*

ISO 8031, *Rubber and plastics hoses and hose assemblies — Determination of electrical resistance.*

ISO 8033, *Rubber and plastics hose — Determination of adhesion between components.*

3 Construction

The hose shall consist of a rubber lining, one or more layers of suitable textile reinforcement and an abrasion resistant outer cover. The lining and cover shall be of uniform thickness, free from porosity and other defects.

4 Dimensions and tolerances

4.1 Bore

The bore of the hose, when measured in accordance with ISO 4671, shall be as specified in table 1.

4.2 Cover thickness

The minimum cover thickness of the hose, when measured in accordance with ISO 4671, shall be as specified in table 1.

Table 1 — Nominal bore and minimum cover thickness

Dimensions in millimetres

Nominal bore	Tolerance	Minimum cover thickness
12,5 16 20	$\pm 0,75$	1,5
25 31,5	$\pm 1,25$	
40 50 63	$\pm 1,50$	2,0
80 100	$\pm 2,0$	

If special cases call for extra sizes :

- for smaller or larger dimensions, further numbers shall be chosen from the R 10 series of preferred numbers (see ISO 3) with tolerances as specified in ISO 1307;
- for intermediate dimensions, numbers shall be chosen from the R 20 series of preferred numbers (see ISO 3) with the tolerances as from the R 20 series for the next larger bore size.

4.3 Length

For cut lengths, the tolerances shall be in accordance with ISO 1307.

5 Physical properties

5.1 Tensile strength and elongation at break of lining and cover

The rubber compounds used for the lining and cover shall, when tested in the manner described in ISO 37, have a tensile strength and elongation at break not less than the values specified in table 2.

Table 2 — Tensile strength and elongation at break

Component	Tensile strength MN/m ²	Elongation at break %
Lining	7,0	250
Cover	10,0	250

5.2 Accelerated ageing

After ageing for 168 ± 2 h at a temperature of 70 ± 2 °C as described in ISO 188, the tensile strength and the elongation at break of the lining and cover shall not decrease by more than 25 % and 30 % respectively from the initial values.

5.3 Hydrostatic pressure requirements

The hose shall be tested in accordance with the method described in ISO 1402 and shall meet the requirements specified in table 3. The ratios of design working, proof and burst pressures are as stipulated for that hose designated No. 3 in ISO 7751.