



# Gas Pressure Regulator RMG 361

ΡΥΘΜΙΣΤΗΣ ΠΙΕΣΗΣ ΑΕΡΙΩΝ



## General Description

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Serving the Gas Industry - WORLDWIDE



# Gas Pressure Regulator

## RMG 361



### Application

- Gas pressure regulators (GDR) for commercial and industrial gas installations as well as local supply installations
- can be used for natural gas and all non-corrosive gases

### Characteristics

- GDR with integrated SAV safety shut-off valve and optional SBV safety relief valve for gas leakages
- max. valve diameter= nominal size = DN
- SAV safety shut-off valve with axial flow; pressure compensation valve (internal by pass) integrated in shut-off valve

### 1. Technical data

|  |                                     |                   |                                       |  |
|--|-------------------------------------|-------------------|---------------------------------------|--|
| <b>maximum allowable pressure PS</b>                   | 10 bar                              |                   |                                       |  |
|  | <b>setting range</b>                | spring no./colour | * RE 0                                | W <sub>a</sub> in bar<br>* RE 1/RE 2      * RE 3 |
|  |                                     | 0 black/blue      |                                       | 0.020 ... 0.030                                  |
|  |                                     | 1/grey            |                                       | 0.025 ... 0.050                                  |
|  |                                     | 2/yellow          |                                       | 0.045 ... 0.100                                  |
|  |                                     | 3/brown           |                                       | 0.090 ... 0.200                                  |
|  |                                     | 4/bright red      |                                       | 0.150 ... 0.300                                  |
|  |                                     | 5/dark red        |                                       | 0.250 ... 0.400                                  |
|  |                                     | 6/light blue      |                                       | 0.350 ... 0.500                                  |
|  |                                     | 7/white           | 1.0 ... 2.5                           | 0.450 ... 0.600                                  |
|  |                                     | 8/green           | 2.0 ... 4.0                           | 0.550 ... 0.800                                  |
|  |                                     | 9/black           |                                       | 0.650 ... 1.000                                  |
| <b>accuracy class AC and lock-up pressure class SG</b> | * RE = regulating assembly          |                   | < 0.020 bar special feature at option |  |
|  | p <sub>a</sub> range in bar         | AC                | SG **                                 |  |
|  | 0.020 ... 0.030                     | 10                | 30/50                                 |  |
| > 0.030 ... 0.100                                      | 10                                  | 20/30             |                                       |  |
| > 0.100 ... 0.500                                      | 5                                   | 10/20             |                                       |  |
| > 0.500 ... 1.000                                      | 2.5                                 | 10                |                                       |  |
| > 1.000 ... 4.000                                      | ≥ 5                                 | ≥ 10              |                                       |  |
| <b>pipe sizes connection</b>                           | DN 25, DN 50, DN 80, DN 100:        |                   | DIN flanges PN 16                     |  |
|  | DN 50, DN 80:                       |                   | ANSI 150                              |  |
| <b>materials</b>                                       | main valve body and SAV             |                   | ductile iron                          |  |
|  | actuator diaphragm                  |                   | steel, aluminium alloy                |  |
| <b>temperature range, class 2</b>                      | diaphragms, sealings                |                   | rubber                                |  |
|  | internal parts                      |                   | aluminium alloy, steel, brass         |  |
| <b>function and strength</b>                           | - 20°C ... + 60°C                   |                   |                                       |  |
| <b>DIN-DVGW registration no.</b>                       | acc. to DIN EN 334 and DIN EN 14382 |                   |                                       |  |
|  | NG-430 1AS 0094                     |                   |                                       |  |



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### Device sizes

| DN  | valve seat diameter | KG value in m <sup>3</sup> /h (for natural gas $\rho_n=0.83$ kg/m <sup>3</sup> ) |                      | max inlet pressure $p_e$ max (bar)*<br>regulating assembly RE |       |       |      |
|-----|---------------------|--|----------------------|---|-------|-------|------|
|     |                     | without noise reduction  | with noise reduction | RE 0  | RE 1  | RE 2  | RE 3 |
| 25  | 25                  | 370  | 460                  | 10  | 10    |       |      |
|     | 31                  |  |                      | 10  | 10    |       |      |
| 50  | 31                  | 800  | 1400                 | 10  | 10    | 10    |      |
|     | 50                  |  |                      | 10  | 6(10) | 10    |      |
| 80  | 60                  | 2200   | 2700                 | 10  |       | 10    | 5    |
|     | 80                  |  |                      | 10  |       | 6(10) | 5    |
| 100 | 60                  | 2900   | 3700                 | 10  |       | 10    | 5    |
|     | 80                  |  |                      | 10  |       | 6(10) | 5    |
|     | 100                 |  |                      | 10  |       | 4(8)  | 5    |

\*) The limitation of the inlet pressure range  $\Delta p_{emax}$  for a diaphragm assembly RE 1 and RE 2 is not given for reasons of material strength but in the interest of maintaining the regulating accuracy. The inlet pressure deviations though may not exceed the limit of the valve's nominal pressure rating. The accuracy classes AC and lock-up pressure classes SG are fixed by the DVGW type tests. The maximum value that is within the allowed exceeding limits is the value indicated in brackets.

### Adjusting ranges of SAV safety shut-off valve RMG 673, K 1 and K2 a

|     | no. | colour     | wire $\varnothing$ in mm | upper response pressure *       |  | lower response pressure *       |  | response pressure group AG** |
|-----|-----|------------|--------------------------|---------------------------------|--|---------------------------------|--|------------------------------|
|     |     |            |                          | adjustable range $W_{ao}$ (bar) | smallest difference between response pressure and normal operating pressure $\Delta p$ (bar) | adjustable range $W_{au}$ (bar) | smallest difference between response pressure and normal operating pressure $\Delta p$ (bar) |                              |
| K1a | 1   | yellow     | 2.50                     | 0.050 ... 0.100                 | 0.030  |                                 |  | 10/5                         |
|     | 2   | bright red | 3.20                     | 0.080 ... 0.250                 | 0.050  |                                 |  | 10/5                         |
|     | 3   | dark red   | 3.60                     | 0.200 ... 0.500                 | 0.100  |                                 |  | 5/2.5                        |
|     | 4   | white      | 4.75                     | 0.500 ... 4.500                 | 0.250  |                                 |  | 5/2.5                        |
|     | 5   | yellow     | 1                        |                                 |  | 0.010 ... 0.015                 | 0.012  | 15                           |
|     | 6   | white      | 1.2                      |                                 |  | 0.014 ... 0.040                 | 0.030  | 15/5                         |
|     | 7   | black      | 1.4                      |                                 |  | 0.035 ... 0.120                 | 0.060  | 5                            |
| K2a | 2   | bright red | 3.2                      | 0.400 ... 0.800                 | 0.100  |                                 |  | 10                           |
|     | 3   | dark red   | 3.6                      | 0.600 ... 1.600                 | 0.200  |                                 |  | 10/5                         |
|     | 4   | white      | 4.75                     | 1.500 ... 5.000                 | 0.300  |                                 |  | 5/2.5                        |
|     | 5   | light blue | 1.1                      |                                 |  | 0.060 ... 0.150                 | 0.050  | 15/5                         |
|     | 6   | black      | 1.4                      |                                 |  | 0.120 ... 0.400                 | 0.100  | 5                            |

\*) Note: If the control device is set for both the upper and lower response pressure value, the difference between the setpoints of the upper and lower response pressure ( $p_{so}$  and  $p_{su}$ ) must be at least 10 % greater than the sum of the values specified for  $\Delta p_o$  and  $\Delta p_u$ .

$$p_{so} - p_{su} \geq 1.1 (\Delta p_o + \Delta p_u)$$

\*\*\*) The higher AG group is for the first half, the lower AG group is for the second half of the setting range.





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CHRYSSAFIDIS

### Safety relief valve (SBV for gas leakages)

| setpoint spring |                        | regulating assembly | actuating pressure ***<br>adjusting via P <sub>as</sub><br>(mbar) |
|-----------------|------------------------|---------------------|---|
| no.             | wire diameter<br>in mm |                     |   |
| 1               | 3.5                    | RE 1                | 15 +5 ... 90 +15  |
| 1               | 3.5                    | RE 2                | 15 +5   |
| 2               | 3.6                    |                     | 30 +15  |
| 3               | 4.5                    |                     | 60 +15  |
| 2               | 3.6                    | RE 3                | 15 +10  |
| 3               | 4.5                    |                     | 30 +10  |

\*\*\* optional fixed setpoint value

### Versions (at option)

- with leakage SBV for regulating assembly 1, 2, 3 (p<sub>a</sub> up to 0.5 bar)
- with SAV manual release
- with SAV electro-magnetic remote release
- with electric position indicator SAV "closed" by an inductive proximity switch
- regulating assembly 1 + 2 with safety diaphragm
- with respirator valve Type RMG 915 (SAV/RE)
- with noise reduction
- without SAV

## 2. Design and Operation (figure 1)

The RMG 361 gas pressure regulator is designed to keep the outlet pressure constant, irrespective of changes in the inlet pressure and volumetric flowrate of the regulating line. It consists of the regulating device (1), valve (2), SAV safety shut-off valve (3), switching device (4), control device (5) and valve housing (6).

The valve of the regulating device is pressure compensated by means of a compensation diaphragm (7). Different valve sizes can be used for each nominal width. An optional SBV safety relief valve (9) can be fitted in the regulating device.

The outlet pressure is fed via the measuring line to the measuring unit. This compares the actual value with the setpoint specified by the force applied by the setpoint spring (10). Any deviation from the setpoint will cause an adjustment in the valve (2) via the valve stem (11) so that the actual value is adjusted to the setpoint. The valve closes tight if there is zero consumption.

Types with a safety diaphragm (13) have this positioned over the diaphragm (8). If this diaphragm (8) breaks, the

safety diaphragm (13) presses against the diaphragm cover and prevents gas leaking into the atmosphere.

A foam metal cylinder (12) can be used in the actuator in order to reduce noise.

The safety shut-off valve arranged on the inlet side shuts off the gas flow if the outlet pressure deviates above or below the specified limit values. In this case the measuring diaphragm (20) of the control device (5) is moved in such way that the balls (21) of the latch mechanism release the actuator stem (22). The spring force causes this to strike the release socket of the switching device (4), as a result of which the shaft (23) of the SAV shut-off valve (3) disengages and causes the SAV shut-off valve to close. The SAV shut-off valve can only be opened manually. For this the outlet pressure at the measuring point must be reduced below the upper response pressure or increased above the lower response pressure by at least the value of the re-engagement differential ( $\Delta p$ ).

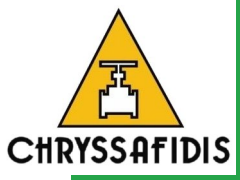
## 3. Mounting, operation and maintenance

For mounting and maintenance the DVGW worksheets G 490, G 491, G 495 and G 600 have to be considered as well as the general operating instructions.

The "General Operating Instructions, Spare Parts

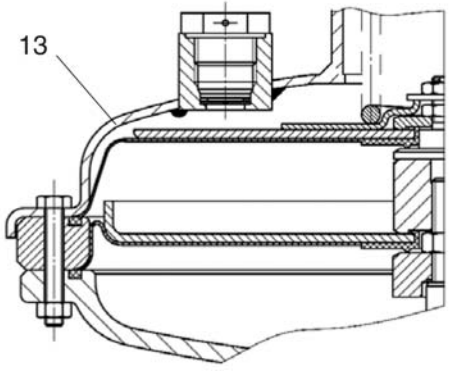
361.20.01" gives full information about mounting, operation, maintenance and important spare parts.

The gas pressure regulator should preferably be mounted in a horizontal position in the pipework.

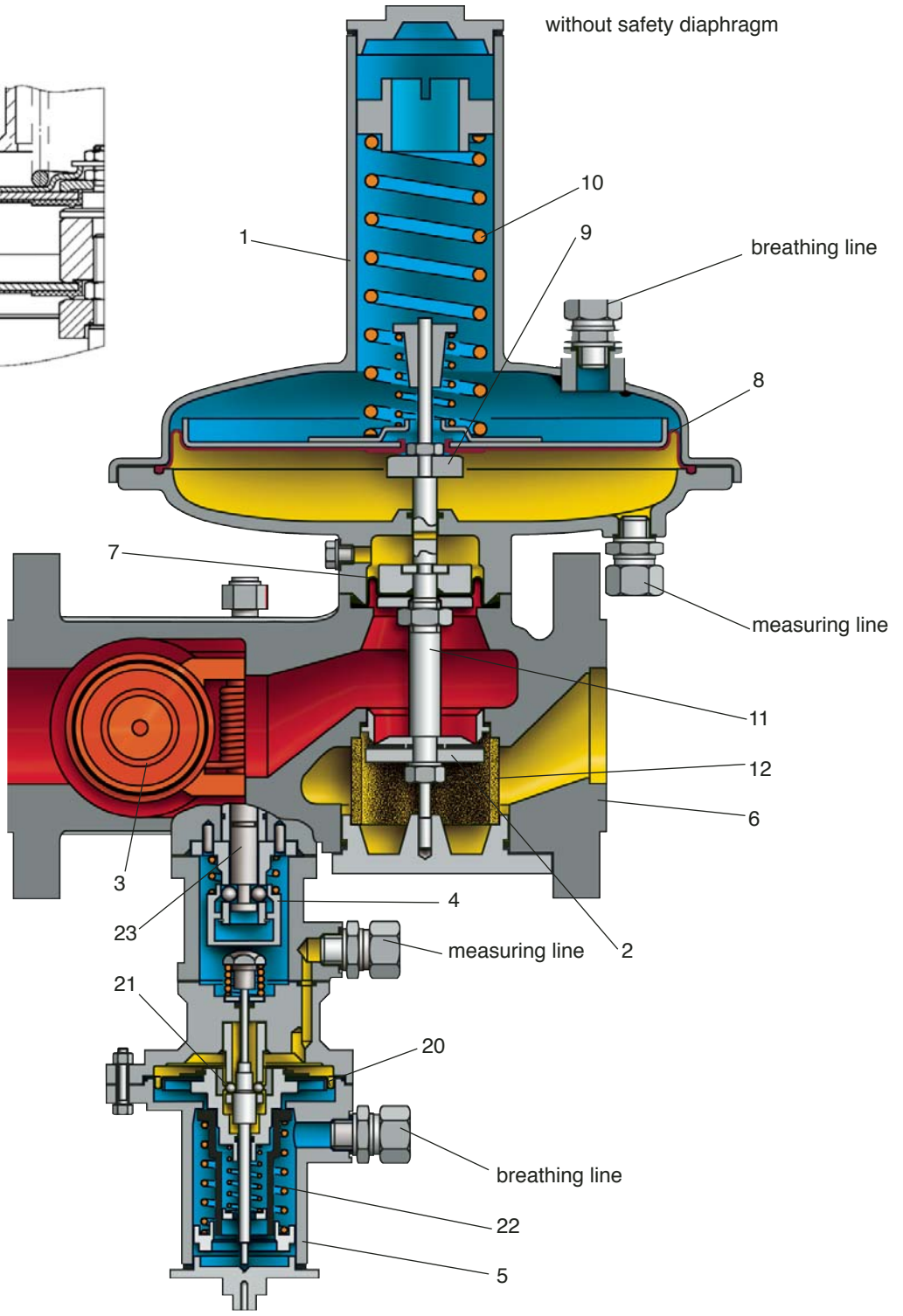


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with safety diaphragm



without safety diaphragm

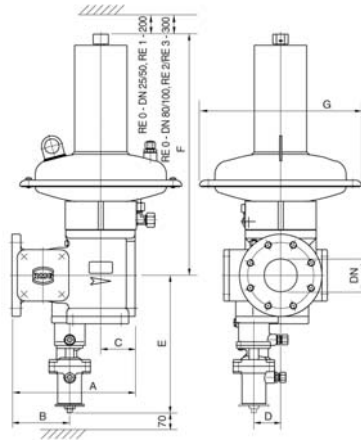




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### 4. Dimensions (figure 2)



| DN   | A    | B   | C   | D  | E   | F                   |      |      |      | G                   |      |      |      | weight              |      |      |      |     |
|------|------|-----|-----|----|-----|---------------------|------|------|------|---------------------|------|------|------|---------------------|------|------|------|-----|
|      |      |     |     |    |     | regulating assembly |      |      |      | regulating assembly |      |      |      | regulating assembly |      |      |      |     |
|      |      |     |     |    |     | RE 0                | RE 1 | RE 2 | RE 3 | RE 0                | RE 1 | RE 2 | RE 3 | RE 0                | RE 1 | RE 2 | RE 3 |     |
| (mm) |      |     |     |    |     |                     |      |      |      |                     |      |      |      | (kg)                |      |      |      |     |
| 25   | 184  | 80  | 52  | 40 | 280 | 355                 | 365  | ---  | ---  | ---                 | ---  | ---  | ---  | 27                  | 20   | ---  | ---  |     |
| 50   | 254* | 114 | 75  | 50 |     | 360                 | 370  | 510  | ---  | ---                 | 195  | 296  | ---  | ---                 | 33   | 26   | 41   | --- |
| 80   | 298  | 140 | 83  | 65 | 330 | ---                 | ---  | ---  | ---  | ---                 | ---  | ---  | ---  | 65                  | ---  | ---  | 60   | 90  |
| 100  | 352  | 160 | 100 | 72 |     | 570                 | ---  | 595  | 590  | 225                 | ---  | ---  | 525  | ---                 | 75   | ---  | 70   | 100 |

\* face to face dimension 250 mm at option

### Connections of measuring lines and vent lines

|                               | actuator  |  | measuring unit<br>measuring line and vent line |
|-------------------------------|---|--|--|
|                               | measuring line  | vent line  |  |
| RE 0<br>DN 25/50<br>DN 80/100 | connection** for:<br>pipe 12x1.5 (thread M 16x1.5)<br>pipe 16x2 (thread M 22x1.5) | connection** for:<br>pipe 12x1.5 (thread M 16x1.5) | connection** for:                              |
| RE 1                          | pipe 12x1.5 (thread M 16x1.5)   | pipe 12x1.5 (thread R 1/2")                        | pipe 12x1.5 (thread M 16x1.5)                  |
| RE 2<br>DN 25/50<br>DN 80/100 | pipe 12x1.5 (thread M 12x2)<br>pipe 16x2 (thread M 16x2)                          |  |  |
| RE 3                          | pipe 16x2 (thread M 22x1.5)   |  |  |

\*\* screw connection without brazing with compression joint according to DIN 2353

- connecting elements: DN 25: screw bolt M 12 x 50 DIN 2509-5.6; nut M12 DIN 934-5  
DN 50 ... 100: screw bolt M16 x 60 DIN 2509-5.6; nut M16 DIN 934-5



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### 4. Description (Example)

| RMG 361   |                      | 50                          | K1A                     | / E1     | / HA                  | / F             | - 31 | / 1L | / 3 | - So                        |
|---|----------------------|-----------------------------|-------------------------|----------|-----------------------|-----------------|------|------|-----|-----------------------------|
| nominal size  |                      |                             |                         |          |                       |                 |      |      |     | (to be specified in detail) |
| DN 25   |                      | 25                          |                         |          |                       |                 |      |      |     |                             |
| DN 50   |                      | 50                          |                         |          |                       |                 |      |      |     |                             |
| DN 80   |                      | 80                          |                         |          |                       |                 |      |      |     |                             |
| DN 100  |                      | 100                         |                         |          |                       |                 |      |      |     |                             |
| control device  | setting range in bar |                             |                         |          |                       |                 |      |      |     |                             |
|   | $W_{ho}$             | $W_{hu}$                    |                         |          |                       |                 |      |      |     |                             |
| K 1A  | 0.05 ... 1.5         | 0.01 ... 0.12               | K 1a                    |          |                       |                 |      |      |     |                             |
| K 2A  | 0.4 ... 5.0          | 0.06 ... 0.4                | K 2a                    |          |                       |                 |      |      |     |                             |
| electromagnetic remote actuation                          |                      | actuation with energization |                         | E1/E2    |                       |                 |      |      |     |                             |
| manual actuation with push button valve RMG 912           |                      |                             |                         |          | HA                    |                 |      |      |     |                             |
| electrical remote transmission of valve position "closed" |                      |                             |                         |          |                       | F               |      |      |     |                             |
| regulator device  |                      |                             |                         |          |                       |                 |      |      |     |                             |
| DN  | diaphragm assembly   | valve                       | SBV blocked             | with SBV | with safety diaphragm |                 |      |      |     |                             |
| 25  | RE 0                 | 25                          | -                       | -        | -                     | 25              | 0    |      |     |                             |
|   |                      | 31                          |                         |          |                       | 31              |      |      |     |                             |
|   | RE 1                 | 25                          | 1                       | 1L       | 1S                    | 25              | 1... |      |     |                             |
|   |                      | 31                          |                         |          |                       | 31              |      |      |     |                             |
| 50  | RE 0                 | 31                          | -                       | -        | -                     | 31              | 0    |      |     |                             |
|   |                      | 50                          |                         |          |                       | 50              |      |      |     |                             |
|   | RE 1                 | 31                          | 1                       | 1L       | 1S                    | 31              | 1... |      |     |                             |
|   |                      | 50                          |                         |          |                       | 50              |      |      |     |                             |
| RE 2  | 31                   | 2                           | 2L                      | 2S       | 31                    | 2...            |      |      |     |                             |
|   | 50                   |                             |                         |          | 50                    |                 |      |      |     |                             |
| 80  | RE 0                 | 60                          | -                       | -        | -                     | 60              | 0    |      |     |                             |
|   |                      | 80                          |                         |          |                       | 80              |      |      |     |                             |
|   | RE 2                 | 60                          | 2                       | 2L       | 2S                    | 60              | 2... |      |     |                             |
| 80  |                      |                             |                         |          | 80                    |                 |      |      |     |                             |
| RE 3  | 60                   | 3                           | 3L                      | -        | 60                    | 3...            |      |      |     |                             |
|   | 80                   |                             |                         |          | 80                    |                 |      |      |     |                             |
|   | 100                  |                             |                         |          | 100                   |                 |      |      |     |                             |
| 100   | RE 0                 | 60                          | -                       | -        | -                     | 60              | 0    |      |     |                             |
|   |                      | 80                          |                         |          |                       | 80              |      |      |     |                             |
|   | RE 2                 | 60                          | 2                       | 2L       | 2S                    | 60              | 2... |      |     |                             |
|   |                      | 80                          |                         |          |                       | 80              |      |      |     |                             |
| RE 3  | 60                   | 3                           | 3L                      | -        | 60                    | 3...            |      |      |     |                             |
|   | 80                   |                             |                         |          | 80                    |                 |      |      |     |                             |
|   |                      | 100                         |                         |          | 100                   |                 |      |      |     |                             |
| setpoint spring regulator assembly                        |                      |                             |                         |          |                       |                 |      |      |     |                             |
| spring no.  | colour               | RE0                         | adjustment range in bar |          | RE1/RE2               | RE3             |      |      |     |                             |
| 0   | black/blue           |                             | 0.020 ... 0.030         |          |                       |                 | 0    |      |     |                             |
| 1   | grey                 |                             | 0.025 ... 0.050         |          |                       | 0.020 ... 0.030 | 1    |      |     |                             |
| 2   | yellow               |                             | 0.045 ... 0.100         |          |                       | 0.020 ... 0.050 | 2    |      |     |                             |
| 3   | brown                |                             | 0.090 ... 0.200         |          |                       | 0.045 ... 0.100 | 3    |      |     |                             |
| 4   | bright red           |                             | 0.150 ... 0.300         |          |                       | 0.075 ... 0.150 | 4    |      |     |                             |
| 5   | dark red             |                             | 0.250 ... 0.400         |          |                       | 0.125 ... 0.200 | 5    |      |     |                             |
| 6   | light blue           |                             | 0.350 ... 0.500         |          |                       | 0.175 ... 0.250 | 6    |      |     |                             |
| 7   | white                | 1.0 ... 2.5                 | 0.450 ... 0.600         |          |                       |                 | 7    |      |     |                             |
| 8   | green                | 2.0 ... 4.0                 | 0.550 ... 0.800         |          |                       |                 | 8    |      |     |                             |
| 9   | black                |                             | 0.650 ... 1.000         |          |                       |                 | 9    |      |     |                             |

